

Durban University of Technology

**The development of a framework for blended learning in
the delivery of Library and Information Science curricula
at South African universities**

Mogiveny Rajkoomar

2015

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APPROVED FOR FINAL SUBMISSION

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SUPERVISOR

15/08/2015

DATE

**The development of a framework for blended learning in the
delivery of Library and Information Science curricula at South
African universities**

Mogiveny Rajkoomar

Supervisor: Associate Professor Jaya Raju

**Submitted in fulfilment of the requirements of the Doctor of Philosophy in
Library and Information Science in the Department of Information and
Corporate Management, Durban University of Technology, Durban, South Africa.**

2015

DECLARATION

I hereby declare that this study represents the original work by the author and has not been submitted in any form at another university. Where use is made of the work of others, it has been duly acknowledged in the text and included in the list of works cited.

M. Rajkoomar

Date

Dedicated to my parents, husband and two children

ACKNOWLEDGEMENTS

All credit is due to the grace of God in empowering me with the knowledge, strength and determination throughout my doctoral journey.

My immense gratitude and thanks to my dedicated supervisor, A/Prof. Jaya Raju for her valuable time, immense contribution, support and encouragement. I really appreciate all that you do.

I thank my parents Asothie and Gansen Govender, for their love, support, encouragement and assistance. I feel blessed to have parents like you.

To my dear husband Nash, for being there for me throughout my studies and always assisting me with whatever I needed. I am so blessed to have you in my life.

To my children Rishane and Verushka, thank you for your support, motivation, understanding and sharing the difficulties encountered during this doctoral journey. Rishane, a special thank you for all you have done to help me complete my research.

Heartfelt thanks to my dear friends especially Kogie Naicker, Kusturie Moodley, Anitha Shah and Camilla Thumbadoo for your constant support and encouragement.

I would also like to express my appreciation to the Durban University of Technology (DUT) for all the support in making this study possible.

Thank you to the staff in the LIS programme at DUT for your support and encouragement.

Special thanks to all the participants of this study for their willingness to participate in this study. I would not have completed this research without your assistance.

ABSTRACT

The core interest in blended learning lies in the need to provide more engaged learning experiences while recognizing the potential of ICTs which has a profound impact on all aspects of life including the Library and Information Service (LIS) field. This doctoral study was undertaken with the objective of exploring the educational and pedagogical issues in blended learning for the development of a framework for designing and implementing blended learning in the delivery of LIS curricula in South African universities. The target populations for this study included, LIS educators from higher education institutions in South Africa offering LIS education, LIS students from these institutions exposed to blended learning interventions and facilitators of blended learning (individuals in institutional teaching and learning units) from the various institutions offering LIS education and using blended learning. The study adopted a mixed method research approach using a fully mixed dominant status design to explore and understand the phenomenon of blended learning at a more detailed level by using qualitative follow-up data (for example, interviews with LIS educators and institutional facilitators of blended learning and focus group discussions with LIS students) to explain and explore the results of a largely quantitative Web survey. The theoretical framework that underpinned the study involved various learning theories, learning styles as well as blended learning models relating to the higher education environment. The key findings of the study reveal that blended learning remains a complex concept with no clear consensus on the key components that need to be blended, how much of each component to blend and the criteria that are needed for the interventions to be regarded as blended learning. This flexibility, to an extent, allows for institutions to tailor the concept and maximise the potential of blended learning while still being responsive to the diverse student populations at South African higher institutions. The framework for blended learning in the delivery of LIS curricula at South African universities proposed by this study is generated from the theories informing this study; the literature reviewed; existing frameworks for blended learning such as Khan's octagonal framework and the Community of Inquiry (CoI) framework; the findings of this study; the researcher's own educational experiences; and, is grounded in the larger field of higher education. The use of blended learning has the potential to transform LIS education and training by encouraging LIS educators to reflect on their teaching and learning practices and to use the proposed framework as a guideline to design and implement pedagogically sound blended learning interventions for LIS education and training.

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LIST OF ABBREVIATIONS

CBT	Computer Based Technology
CELT	Centre for Excellence in Learning and Teaching
CoI	Community of Inquiry
CoPs	Communities of Practice
DAC	Department of Arts and Culture
DUT	Durban University of Technology
FRC	Faculty Research Committee
HBDI	Herrmann Brain Dominance Instrument
ICS	Information Communication Services
ICTs	Information and Communications Technologies
ILS	Index of Learning Styles
IT	Information technology
IWB	Interactive whiteboards
LIS	Library and Information Science
LMS	Learning Management System
LSI	Learning Style Inventory
MOOCs	Massive Open Online Courses
NQF	National Qualifications Framework
OA	Open access
ODC	Online Distance Learning
OHPs	Over head projectors
PASW	Predictive Analytics SoftWare
PDA's	Personal digital assistants
PhD	Doctor of Philosophy
RSS	Really Simple Syndication
SA	South African
SPSS	Statistical Package for the Social Sciences
UCT	University of Cape Town
UNISA	University of South Africa
USA	United States of America
VLE	Virtual Learning Environments
WBT	Web-based training
WWW	World Wide Web

Chapter 1: Introduction

1.1 Background to the study

There are many challenges facing higher education in South Africa as well as globally. These challenges include: the diversity of the student body, cost efficiency, achieving measurable outcomes, and the potential of new and advanced technologies to provide personalized learning while still adhering to the traditional ideas of the purpose of education (Nel and Wilkinson 2006: 553). Advances in information and communications technologies (ICTs) have had a huge impact on the online learning environment. It has led to an increased level of integration and collaboration between online learning and traditional face-to-face learning. There is a move towards a global higher education community that is in search of more effective teaching and learning within a diverse and technological environment (Nel and Wilkinson 2006: 553). Advances in ICTs have also had a profound impact in the Library and Information Science (LIS) field. Bawden et al. (2007:14) confirm that the information environment is continually changing with advances in telecommunications and social networking featuring Web 2.0 and Library 2.0. Despite the availability of all these advances in technologies, teaching and learning with and through digital technologies requires effective pedagogy (Apperley and Walsh 2010:125). These changes need to lead to changes in curriculum content as well as in methods of teaching and learning. The increasing use of the Internet and digital technologies by higher education students calls for a transformation of the teaching and learning environments in higher education settings. This transformation however should be facilitated by careful choice of, and effective combination of various modes of delivery, models of teaching and styles of learning achieved through effective communication.

It must also be noted that presently, pedagogical traditions in higher education institutions exist where teaching and learning has been facilitated by dialogue and discussion in higher education classrooms. Reinhart (2008: 14) makes reference to this as the “Oxbridge model”. Educators and students are therefore accustomed to direct oral communication. Sommaruga and De Angelis (2007: 682) purport that direct oral communication “is sensitive and open to direct challenges and dialogues, including body- language”. They also believe that the literacy level that is required is higher for online or e-learning than in traditional education. It can therefore be seen that there has to be a healthy mix of both traditional methods of teaching and learning combined with the potential and functionalities of current technology.

On the one hand we have the face-to-face learning environment where emphasis is placed on human interaction and on the other hand, we have the online learning environment with the emphasis on computer-based technologies.

Lecturers in higher education institutions need to address the issue of the increasing use of the Internet by higher education students and a call for a transformation of the teaching and learning environments in higher education settings, by introducing innovative ways of teaching and learning. Introducing blended learning could be one of the means of improving the quality of teaching and learning in higher education.

Advances in ICTs have had a huge impact on the online learning environment. This has led to an increased level of integration and collaboration between online learning and traditional face-to-face learning. Although the main aim of blended learning is to combine the best of classroom practices or face-to-face learning with the best of online learning, it is imperative that there is thoughtful integration of the modes of delivery, learning theories, learning styles and models of teaching into blended learning interventions.

Learning theories may be seen as systemic and integrated understandings of how humans interact and function in their environment and how they are used to guide teaching and learning activities (Nulden 2001: 364). Behaviourism, cognitivism and constructivism are some of the main theories that were used to frame this study. Social learning theory and the humanist theory were also examined with regard to their relevance to blended learning. Learning style may be defined as the combination of cognitive, emotional, and physiological factors that determine each individual's most effective process for learning. A variety of systems exist for categorizing these factors into standardized classifications. Since different people have different learning styles, it is essential to provide a variety of instructional approaches, learning material and activities (Association for Quality and Participation 2003 [USA]: 31-32). This study examines the various learning styles and their relevance to blended learning. Examining the various learning theories and learning styles and their relevance to blended learning enabled the researcher to establish the educational design of blended learning interventions for application in the development of a framework for designing and using blended learning in the Library and Information Science (LIS) curriculum.

The benefits of using blended learning for higher education institutions include facilitation of easier communication and interaction (Rohleder et al. 2008: 101); motivation and metacognition (Klein, Noe and Wang 2006: 674, 679); enhanced course delivery with

improvement in cognitive and reflective skills (Pratt 2003: 4); improved retention and identification of 'at risk' students (Hughes 2007: 350-351); improved pedagogy; increased access and flexibility and increased cost effectiveness (Graham 2004). Blended learning lends itself to both independent and group activities. Web-based conference systems and the support for audio and video Web provide an integrated environment for delivering course content and participant interaction. The online environment also fosters collaborative activities and assignments. Peer commenting on work is also made possible. The ease with which students can submit assignments electronically and take self tests and examinations online has led to many institutions exploiting the technology to globalize their courses. Online assessments can also be supported by computer conferencing (Mason 1998: 2). These benefits could enhance the quality of higher education and can also be used to meet some of the challenges faced by higher education institutions currently. This study explored the benefits of blended learning for LIS education and training at South African universities.

1.2 Research problem

Traditional LIS skills such as cataloguing, classifying, indexing, abstracting and information retrieval are shifting towards the electronic format. Technology and applications are changing rapidly and one needs to upgrade technical skills to be successful in the information sector. Employers in the information and management sector, which includes LIS, have identified a range of information technology (IT) training needs which varied from education in general IT skills, to advanced and specific skills that include Web design and development; digitization; Internet searches; information retrieval; the development and operation of databases and the operation of electronic library management systems and e-resources (Department of Arts and Culture 2010: 87).

Information technology has been a part of the LIS curricula since libraries began using computers (Robins 2002: 22). The changes brought about by the new information and communications technologies have had a great impact on LIS education. This calls for changes in the curriculum as well as in the form of delivery of content in LIS education. LIS students also need to be competent in using the technologies that have infiltrated the LIS sector. The Internet has become a powerful information and communication tool and has made an impact on libraries (Horvat 2003: 229). This allows LIS educators to offer instruction in different formats and modes of delivery to provide more flexibility and

innovation in teaching and learning in LIS education. ICTs are also used for reinforcing traditional teaching.

Thus far the focus in LIS education has been on the inclusion of information technology within the LIS curricula (Ocholla and Bothma 2007: 154) and not on the form of delivery of LIS curricula. The information environment is dynamic with constant changes in ICTs including social networking. This study explored the impact of technologies in the delivery of LIS curricula at South African universities in terms of the instructional design and implementation of blended learning. It focused on exploring the educational and pedagogical aspects in the use of blended learning with the aim of developing a framework for effective and meaningful blended learning in the delivery of LIS curricula. This study also explored the benefits of using more transformative and interactive teaching and meaningful learning practices in LIS education.

1.3 Objective of the study

The broad objective of the study was to explore the educational and pedagogical issues in blended learning for the development of a framework for designing and implementing blended learning in the delivery of LIS curricula in South African universities.

1.4 Critical questions

Critical questions generated to meet the objective of the study included:

- What are the educational benefits of blended learning for LIS programmes in South Africa?
- What learning theories are used in the educational design and facilitation of blended learning interventions?
- What are the pedagogical benefits of blended learning for LIS programmes in South Africa?
- What teaching methods are used in the design and facilitation of blended learning interventions?
- To what extent do LIS programmes in South Africa currently use dialogue and discussion/face-to-face type delivery in LIS education?
- To what extent do LIS programmes in South Africa currently use online learning experiences?

- Do LIS programmes in South Africa currently make use of blended learning? If yes, what blended learning interventions are used?
- What are the theoretical and practical aspects that may be used in designing effective blended learning interventions for the delivery of LIS curricula?
- What effective blended learning framework may be developed for the meaningful delivery of LIS curricula in South African universities?

1.5 Rationale for the study

According to Garrison and Kanuka (2004: 99) blended learning is inherently about rethinking and redesigning the teaching and learning relationship. The facilitation of critical thinking and creative and complex thinking skills needs to be fostered in higher education institutions especially in view of the current information age. Blended learning offers possibilities to create transformative environments that can effectively facilitate the development of these skills. On the basis of over twenty years of experience in the higher education environment, the researcher opines that these important skills are largely lacking among many in the present South African higher education student population. Blended learning initiatives could be used to facilitate the development of these skills.

Based on the literature reviewed, the researcher is of the opinion that blended learning can bring about enhancements in teaching and learning especially in the areas of collaboration in designing activities for coping with and handling non-participants and building on the advantages of online technologies. Blended learning also helps with motivating students and enabling students to participate actively in providing an environment that can maintain their interest and enthusiasm (Klein, Noe and Wang 2006: 674). Furthermore LIS students need to become familiar with the use of technologies that are used in the present LIS environment which is deeply rooted in digital technologies. Students also need to be able to take responsibility for their learning. These are very real issues in higher education that need to be addressed.

The researcher is currently lecturing in the Library and Information Studies Programme at Durban University of Technology (DUT) and has completed the Pioneers Programme offered by the Centre for Excellence in Learning and Teaching (CELT) at the same university. The Pioneers Programme offers training in designing and implementing online classrooms using

the WebCT Learning Management System (LMS). This exercise has exposed the researcher to some of the educational benefits of blended learning resulting in a keen interest in introducing transformative and innovative teaching and learning into the LIS programme by also exploring the pedagogical benefits of blended learning. In this study the researcher explored the educational and pedagogical aspects of blended learning for the purposes of developing a framework for the use of blended learning in LIS education. The use of blended courses in LIS education could reach out to a wider student population that could include continuing education for those who are currently in LIS practice and without the necessary qualifications. The development of a framework for pedagogically and educationally sound blended courses for LIS programmes also aims at contributing towards producing better prepared LIS diplomates and graduates for the Library and Information Sector in South Africa.

1.6 Overview of methodology

This study adopted a mixed method research approach using a fully mixed dominant status design (Leech and Onwuegbuzie 2009: 267-271) to explore and understand the phenomenon of blended learning at a more detailed level by using qualitative follow-up data from interviews with LIS educators and institutional facilitators of blended learning, as well as focus group discussions with LIS educators.

The current study involved a two-phase project in which the researcher collected quantitative and qualitative data using open-ended and closed questions in a Web-based exploratory survey (discussed in Section 4.4.4.1) for the first phase. The results were analysed, and the results were then used to plan the second qualitative phase of the research. The quantitative results informed the researcher on which participants to be purposefully selected for the qualitative phase of the research. The findings from the Web-based exploratory survey, the theoretical framework underpinning this study (refer to Chapter 2) as well as the literature reviewed (refer to Chapter 3) pointed to the types of qualitative questions that were asked of participants in the semi-structured face-to-face interviews with LIS educators, semi-structured telephone interviews of facilitators of blended learning as well as focus group discussions with LIS students, in the second qualitative phase of this research. Data from the various data sources (the theoretical framework, the literature, Web survey with LIS educators, semi-structured face-to-face interviews with LIS educators, semi-structured telephone interviews to facilitators of blended learning as well as focus group discussions

with LIS students) were integrated during the data analysis and during the interpretation stage in the discussion of the findings. Priority was given to the second qualitative stage of the research as the researcher's aim was to work directly with the experiences and understandings of the LIS educators, facilitators of blended learning and the LIS students in developing a framework for designing and implementing blended learning in the delivery of LIS curricula in South African universities. Finally the theoretical perspective was based on the objective of the study, the research questions and the research context which guided the researcher to choose pragmatism and interpretivism as the epistemological lenses for this study (discussed in Section 4.2).

1.7 Clarification of key concepts

According to Leedy and Ormrod (2005: 55) “without knowing explicitly what the term means, one cannot evaluate the research or determine whether the researcher has carried out what was proposed in the problem statement”. He goes on to explain that the terms need to be defined operationally where the definition must interpret the terms as they are used in relation to the research project. Glatthorn and Joyner (2005: 169) recommend that the definitions should only be included in one or more of the following conditions:

- The term is relatively new in the profession and has not gained general currency;
- The term is often used ambiguously in the profession, and some preciseness should be given; and
- The term is a general one, and the researcher wishes to use it in a special way.

Clarification of the terms and concepts discussed below apply to one or more of the above criteria.

1.7.1 Blended learning

There are many varying definitions of blended learning offered in the literature. The term also needs to be clarified in terms of other related terms such as hybrid courses and online learning, e-learning, face-to-face learning, interactive learning and collaborative learning. Graham (2004), drawing from numerous authors, defines blended learning as a combination of instructional or delivery media; a combination of instructional methods and a combination of face-to-face instruction with computer-mediated instruction. Currently this is the most widely used definition in the area of blended learning. However Heinze and Proctor (2004) define blended learning as being “learning that is facilitated by the effective combination of

different modes of delivery, models of teaching and styles of learning, founded on transparent communication amongst all parties involved with the course”. The researcher would like to extend this definition to include that blended learning combines online and face-to-face approaches, since this is a more widely used reference in the literature on blended learning. Taking into consideration that the present study is situated in the higher education context and the focus is on the educational aspects, particularly focusing on dimensions of teaching and learning styles associated with blended learning, the researcher has opted to adopt the definition by Heinze and Proctor (2004) with the extension identified, for the present study.

1.7.2 E-Learning/Online learning

E-Learning, also referred to as online learning, has varying definitions. For the purpose of this study the terms e-learning and online learning are used synonymously. E-Learning can be defined as “learning facilitated and supported through the use of information and communications technology”. It can cover a spectrum of activities from the use of technology to support learning as part of a ‘blended’ approach (a combination of traditional and e-learning approaches), to learning that is delivered entirely online. Irrespective of the technology used, learning is the key element (Managing your digital resources 2010). It may also be seen as an alternative to delivery instructions in a learning environment that uses various media and ICTs, especially Web-related technology, to create, manage, and enable distributed learning synchronously and asynchronously with and without the presence of an instructor (Chin Kah 2006: 37). E-Learning may involve the use of some, or all, of the following technologies: desktop and laptop computers; software, including assistive software; interactive whiteboards; digital cameras; mobile and wireless tools, including mobile phones; electronic communication tools, including email, discussion boards, chat facilities and video conferencing; Virtual Learning Environment (VLE) learning activity management systems (Managing your digital resources 2010). Tavangarian et al. (2004: 274) define e-learning as:

All forms of learning and teaching, which are procedural in character and aim to effect the construction of knowledge with reference to individual experience, practice and knowledge of the learner. Information and communication systems, whether networked or not, serve as specific media to implement the learning process.

The above definition by Tavangarian et al. (2004) will be adopted for this study as this definition is based on the constructivist learning model and the focus of this study is on the

educational aspects of blended learning that include a combination of different modes of delivery, models of teaching and styles of learning.

1.7.3 Education and pedagogy

The meaning of education in contrast with pedagogy is explored. Education can be defined as ‘learning for its own sake’ while pedagogy can be defined as learning that is orientated towards social goals. In education the results of learning cannot be measured according to a common standard, however in pedagogy results must be measured since the point of learning is to equip people for specified social, political and economic requirements (Hinchliffe 2001: 31). Education can also be defined in a narrower sense as the action or process of acquiring knowledge, skill and understanding that someone gets from attending a school, college or university (Learners’ dictionary 2012). Pedagogy on the other hand is the study of “being a teacher or the process of teaching”. The term generally refers to strategies of instruction, or style of instruction (WordNet 2.0 2003). Both terms were used in this study to enable the researcher to explore the educative and pedagogic aspects of blended learning from the perspectives of the LIS educators and the LIS students involved in the study. The educational aspects examine the teaching and learning environment in totality with a focus on the students while the pedagogical aspect of the study focuses on the educator and the process of teaching particularly in the higher education context.

1.7.4 Student and learner

Pearsall (2002: 1424) defines a student as “a person that is studying at a university or other place of higher education”. The Free Dictionary (2014) defines the term learner as “someone (especially a child) who learns (as from a teacher) or takes up knowledge or beliefs”. The study is located in a higher education context and therefore the term ‘student’ is used predominantly. Discussion around general educational concepts, however applies, to both students and learners, and in these instances the researcher uses the terms students and learners interchangeably.

1.7.5 Library and Information Science

Library Science is an interdisciplinary science that incorporates the humanities, law and applied science, to study topics that are related to libraries, the collection, organization,

preservation and dissemination of information resources, and the political economy of information and hence according to (WordNet 2.0 2003) Library Science includes:

how information resources are organized to serve the needs of select user groups, how people interact with classification systems and technology, how information is acquired, evaluated and applied by people in and outside the libraries as well as cross-culturally, how people are trained and educated for careers in libraries, the ethics that guide library service and organization, the legal status of libraries and information resources, and the applied science of computer technology used in documentation and records management.

Information science may be defined as “the professional knowledge and skill with which recorded information is selected, acquired, organized, stored, maintained, retrieved, and disseminated to meet the needs of a specific clientele, usually taught at a professional library school”. Information Studies is “an umbrella term used at some universities for a curricular division that includes Library and Information Science (LIS) and allied fields (Informatics, Information Management, etc.)” (Online Dictionary for Library and Information Science 2010).

Library and Information Science (LIS) generally refers to Library and Information Science and Library and Information Studies. LIS is intended to emphasize the scientific and technical foundations of the subject, and its relationship with Information Science. LIS can be seen as an integration of two fields, Library Science and Information Science, a field related to Computer Science and Cognitive Science (WordNet 3.0 2006).

1.7.6 Curriculum

The term curriculum may be defined as a plan that involves a sequence of steps for achieving goals; “a field of study with its own foundations, knowledge domains, research, theory, principles, and specialists” and in terms of subject matter or content (Ornstein and Hunkins 2009: 11). Ornstein and Hunkins (2009: 11) also explain that “the planned, formal curriculum focuses on goals, objectives, subject matter, and organization of instruction”; the unplanned, informal curriculum deals with socio-psychological issues among students and educators, particularly their feelings, attitudes and behaviors. This is referred to as the “hidden” curriculum. This study takes into account both the planned and unplanned

curriculum in LIS education. The researcher found that the following definition by Stenhouse (1975: 45) to be relevant to this research project:

A curriculum is an attempt to communicate the essential principles and features of an educational proposal into such a form that it is open to critical scrutiny and capable of effective translation into practice.

The reason the researcher found the above definition relevant to this study is that it alluded to implications of enhancing critical thinking and effective practice in teaching and learning. Braslavsky (2002) explains that the curriculum defines the educational foundations and contents, following a particular order in relation to the amount of time available for the learning experience, taking into consideration methods to be used, the resources for teaching and learning, evaluation and educators' profiles.

Curriculum development at universities in South Africa has traditionally been discipline-based with departments having a high level of autonomy in designing and promoting new programmes and qualifications (Raju 2006: 8). In South Africa the Higher Education Act (Act 101 of 1997), promulgated in the country's new democratic era, stipulates the principle that a single co-ordinated qualifications framework should be developed for all higher education qualifications in line with the National Qualifications Framework (NQF). The new system therefore calls for a shift from the disciplinary approach to a programme based approach (Republic of South Africa 1997: 17). This also leads to the renewal of the curriculum at the programme level, which will impact on the teaching and learning and the delivery of the various programmes offered at higher education institutions.

1.8 Limitations and delimitations of the study

According to Marshall and Rossman (2006: 42) no research project is without its limitations and there is no perfectly designed research. The researcher also needs to disclose what she intends to do and, and conversely, does not intend to do. What the researcher intends to do is stated in the objective of the study and what the researcher does not intend to do is stated in the delimitations (Leedy and Ormrod 2005: 61).

This research project is situated in a specific context, which is the LIS discipline and as such the researcher cannot make claims of generalizability for all disciplines in higher education. However the findings, recommendations and framework may be transferable (with necessary adaptations) to other disciplines in the higher education sector.

The study was conducted with nine public higher education and training institutions in South Africa that offer education and training in library and information sciences, archival sciences and records management, involving eight universities and one university of technology. Two universities that changed their qualification focus to include only information and knowledge management and excluded any reference to librarianship were not included in this study. Private higher education institutions that offer modules in records management were also not included in this study since the primary focus of their qualifications is not in the LIS sector.

1.9 Structure of the research report

This chapter provided an introduction and background to the research problem and contextualized blended learning, particularly in higher education. The research problem followed by the objective of the study, critical questions generated to address the objective of the study and the rationale for the study, were presented. An overview of the methodology used was provided, key concepts were clarified and limitations and delimitations of the study explicated.

Chapter 2 provides the theoretical framework of the research. It looks at the various learning theories, that is, behaviourism, cognitivism, constructivism and connectivism in relation to blended learning. The different learning styles are discussed and, finally, Khan's Octagonal Framework and the Community of Inquiry (CoI) framework for blended learning are examined.

Chapter 3 consists of a review of the literature in the area of blended learning, particularly in higher education. The discussion includes the concept of blended learning, blended learning and its relationship to curriculum quality, educational aspects of blended learning and blended learning pedagogy in higher education.

Chapter 4 provides a detailed explanation of the research design, approach and methods used in this study. A mixed method research approach, within the pragmatic and interpretivist paradigms, is employed to examine the educational and pedagogical issues relating to blended learning. The methods and instruments used to collect data and an explanation of the data analysis are also provided.

Chapter 5 presents the findings emanating from the analysis of data collected.

Chapter 6 discusses the main findings in the context of the theories framing the study, relevant literature and the critical questions generated to address the objective of the study. Based on this discussion, conclusions are drawn, recommendations are made and a framework for designing and implementing blended learning in LIS education, is presented.

1.10 Summary

This introductory chapter provided a background to the study and its research problem and contextualized blended learning, particularly in higher education. The chapter presented the research problem, the objective of the study and the critical questions generated to address this objective, as well as the rationale for the study. It provided an overview of the methodology adopted, key concepts were clarified and limitations and delimitations of the study were outlined. The next chapter covers the theoretical framework of the study.

Chapter 2: Theoretical Framework

2.1 Introduction

The theoretical framework positions the research in the discipline/s in which the researcher is working (Henning 2004: 12, 25). Research is about investigating particular issues; a process that cannot be done without background knowledge. The background knowledge enables the researcher to frame the research inquiry. The researcher needs to interpret information from the basis of a theoretical framework that locates the study. The evidence will be obtained from the data collected and from the theory that explicates and explains the data. The theoretical framework also enables the researcher to explicitly identify the point of entry into the research. Furthermore, the success of e-learning programmes has been linked to a design based on a sound theoretical framework (Hung and Der-Thanq 2001: 4). Understanding how students acquire and develop knowledge in a blended learning environment by examining learning theories and learning styles relating to the blended learning environment, is crucial to the development, design and delivery of blended learning interventions with a focus on chosen pedagogical principles.

Part of the objective of this study is to develop an educational framework for blended learning in the delivery of Library and Information Science curricula in South African universities. A well constructed educational framework would offer guiding principles to help educators design, develop, deliver and evaluate LIS programmes as well as suggest steps for creating educationally sound learning resources. This chapter examines key concepts and theories that are related to this study. The researcher needs to be able to use existing knowledge (theory) to explain what is encountered in the data. Theories are created by developing sets of propositions or generalizations that establish relationships between variables in a systematic way. Theories are essentially human constructions that are derived from information that people collect by seeing, hearing, touching, sensing, smelling and feeling (Henning 2004: 14). A theory can also be seen as “a series of concepts organized into assumptions and generalizations that lead to a hypothesis about a phenomenon” (Glatthorn and Joyner 2005: 116). In this chapter the teaching and learning theories relating to blended learning, the learning styles that can be aligned to the relevant learning theories, and existing frameworks relating to blended learning are examined.

2.2 Learning theories

Learning theories are systemic and integrated understandings of how humans interact and function in their environment and are used to guide teaching activities (Nulden 2001: 364). For the purposes of this study the researcher examines learning theories that apply to blended learning. This enabled the researcher to establish the educational design and facilitation of blended learning interventions and is also necessary for application in the development of a framework for designing and using blended learning in the Library and Information Science curriculum. Furthermore, examining the theories of learning helps to describe the process of learning and provides an important aspect of the framework for using blended learning in the LIS curriculum.

Behaviourism, cognitivism and constructivism are some of the main learning theories that were consulted in this study. These three broad learning theories are most often utilized in the creation of instructional environments (Siemens 2004). Behaviourist strategies are used to teach the facts, cognitive strategies the process and principles, and constructivist strategies of higher level thinking promote personal and contextual meaning (Bezuidenhout, Van der Westhuizen and De Beer 2005: 5-8). Although the social learning theory and the humanist theory can be related to blended learning, the researcher has chosen to focus on behaviourism, cognitivism and constructivism since social learning theory combines cognitive and behavioural theories and suggests that learning takes place by observing and interacting with others in a social setting. Humanistic theory considers learning from the perspective of the personal potential for growth and includes both affective and cognitive dimensions of learning (Sargeant et al. 2006: 134). All of the theories mentioned above were developed at a time when technology did not have such an impact on teaching and learning. Most learning theories see learning as occurring within a person. These theories do not address learning that occurs outside of people, for example, learning that is stored and manipulated by technology (Siemens 2004). The researcher, therefore, further explored a learning theory for the digital age, which is connectivism. Although there is some contention about the status of connectivism as a learning theory (Kerr 2007; Kop and Hill 2008; and Verhagen 2006), the key principles of connectivism are relevant to this research.

2.2.1 Behaviourism

The theory of behaviorism focuses on the study of behaviours that are shown openly and that can be observed and measured (Alonso et al. 2008: 390). Behavioural theorists purport that

external factors in the environment shape learning and not the individual student. Learning is manifested by observable behavioural change. Here the two core principles of learning are contiguity (how close in time events must be for a link to be formed) and reinforcement (using feedback to increase the likelihood of the desired action) (Sargeant et al. 2006: 133). In behaviourism, it is the behaviour of the learner that determines whether learning has taken place. Learning can be seen as the “acquisition of mental schemata, knowledge, abilities, skills, etc., that can be used to solve problems potentially more successfully” (Alonso et al. 2008: 389). This view of learning and the theory of behaviorism where the stimulus and responses are observed quantitatively, however, pose limitations in the understanding of learning. Behaviorist traditions emphasise the need for developing behavioral objectives, detailed task analyses and the shaping of resources through selective reinforcement. Instruction is individualized and each student responds actively to questions and receives immediate feedback on their responses. Complex tasks are broken down into smaller, more manageable tasks that need to be mastered as a pre-requisite for more complex tasks (Seale and Cooper 2010: 1111).

In blended learning the expected outcomes of each lesson needs to be explicitly made clear to the students or learners. Adequate feedback and reinforcement also needs to take place (Sargeant et al. 2006: 133). Grading and a move from simple to complex, known to unknown and knowledge to application should be followed (Bezuidenhout, Van der Westhuizen and De Beer 2005: 9). This indicates that in designing blended learning interventions, behavioural instruction needs to be observable and measurable and the tasks need to be manageable and in measurable units if the learning outcome deems it necessary.

2.2.2 Cognitivism

Cognitivism is where learning is viewed as an internal mental process in which information storage, processing and retrieval is important. Cognitivists focus on the internal processes of learning, such as memory, thinking, reflection, obstruction, motivation and meta-cognition (Bezuidenhout, Van der Westhuizen and De Beer 2005: 6). Learning is also seen as a developmental process based on prior knowledge, experiences and expectations. Learning is viewed as the acquisition and reorganization of the cognitive structures to enable the processing and storage of information (Alonso et al. 2008: 390). The cognitive style of the student refers to the way of maintaining thought processes and processing information. Instructional material should match the cognitive level of the student for re-use, and for

further investigation and assimilation of more complicated material (Bezuidenhout, Van der Westhuizen and De Beer 2005: 6). In blended learning the cognitive model may be used to facilitate higher level learning where instructional design of blended learning interventions need to take into consideration the inclusion of advanced and meaningful elements when designing instruction from the simple to the complex; stimulating higher-level cognitive processes by using open-ended questions compared with closed questions. Higher level questions that address application and evaluation of knowledge rather than only recall of knowledge can be used. Other suggestions when using cognitive theory include responding to questions and responses by encouraging deeper thought, more thorough analysis, or consideration of additional factors, instead of simply giving a “yes” answer (Sargeant et al. 2006: 133). Fostering higher order thinking is necessary for improving the quality of teaching and learning in higher education.

2.2.3 Constructivism

Constructivism may be seen as a philosophy of learning that articulates mechanisms by which knowledge is internalized by learners. Constructivism emphasizes the active role played by individual students in the construction of knowledge, the greater importance of individual and social experience in the process of learning and the awareness that knowledge attained may vary in its accuracy as a representation of an objective reality (Cooner 2005: 378).

There are many types of constructivism. These include exogenous constructivism, dialectical constructivism and endogenous constructivism (Moshman 1982: 371). **Exogenous** focuses on the “external nature of knowledge” (Cooner 2005: 379). This view presupposes that reality is knowable and that a successful teaching and learning event will result when an educator is able to assist a student to internalise an accurate reconstruction of the external reality. This view emphasizes the importance of learner directed discovery of knowledge. **Endogenous** constructivism focuses on the “internal” nature or structures of knowledge (Cooner 2005: 379; Moshman 1982: 374). Knowledge is constructed from earlier internal mental structures. Acquisition of knowledge is seen as the reorganization and reconstruction of old knowledge structures in light of new experiences. Endogenous constructivism presupposes that external reality is unknowable (Cooner 2005: 379). **Dialectical** constructivism emphasizes the interactional nature of knowledge, where knowledge development occurs with the interaction between the student (internal knowledge) and the environment (external knowledge). This

view emphasizes that learning happens through “a process of building internal models of external structures”, where the students’ prior experiences, beliefs, cultures and languages and their interaction with others and direct instruction from educators influence their learning (Cooner 2005: 379). The dialectical position was favoured for this research as it focuses on the interactional nature of knowledge.

Constructivism tends to emphasize knowledge construction, rather than knowledge transmission (Beyers 2009: 220). Cooner (2005: 375-376) argues that a constructivist approach focusing on knowledge construction as opposed to knowledge transmission is better at preparing students to gain skills that are required to work in situations of diversity. Constructivism emphasizes the building or construction that takes place when people engage in learning activities by active engagement and understanding the environment according to their experiences, perceptions and mental models. In constructivism learning is seen as a personal interpretation of the world where the learners construct or interpret their own reality based on their perceptions and experiences (Alonso et al. 2008: 390). The constructivist approach emphasizes that the individual learner needs to build knowledge and skills and that information exists within these built constructs rather than within the environment (Pang 2008: 4).

The constructivist approach is student-centred where students are actively involved in creating meaning to context. New knowledge is constructed and meaning is found through constructivism of the student’s related world and interaction with peers and study materials. The collaborative cooperative aspects of blended learning are based on social constructivist ideas of learning with the view that learning is social rather than individual; it is an interactive, dialogical context-based practice rather than an acquisition of transmitted independent knowledge. Learning based on the social constructivist ideas promotes critical thinking (Rohleder et al. 2008: 97).

A student in the blended learning environment constructs meaning based on his/her interaction with both the face-to-face and technology-driven environments by creation, which is active, rather than just reception which is passive (Pang 2008: 6). In the blended learning environment, the constructivist paradigm uses a mixture of discourse in the classroom environment and visual media in the electronic environment to aid knowledge construction and reinforcement. As such, multimedia designs and information retrieval concepts are

central components of the constructivist learning space (Rodrigues 2002: 49). Other practical suggestions that can be used in the constructivist setting by facilitators of blended learning interventions include: encouraging student-student interaction in response to challenges; case-based questions and encouraging group problem solving of practical issues that arise in practice (Sargeant et al. 2006: 135).

2.2.4 Connectivism

The learning landscapes in the digital age are networked, social and technological (Dunaway 2011: 678). Teaching and learning especially in higher education takes place using various information and communications technologies both within and outside the classroom. Students have a wide range of online information resources available, including community based and collaborative knowledge systems, open access publications of scholarly communication, online databases and other library resources. This is made possible by networked information using the Internet. Students use technology to form their own information networks which include learning communities where students participate in the knowledge creation process (Dunaway 2011: 675). The inclusion of technology and making the connection using technologies as learning activities begins to move learning theories into a digital age.

According to Siemens (2004):

Connectivism is driven by the understanding that decisions are based on rapidly altering foundations. New information is continually being acquired. The ability to draw distinctions between important and unimportant information is vital. The ability to recognize when new information alters the landscape based on decisions made yesterday is also critical.

Connectivism can therefore be seen as having evolved with the growing interest in the teaching and learning potential of Web 2.0 technologies and practices. Connectivism is “the integration of principles explored by chaos, network, and complexity and self-organization theories” (Siemens 2004). Central to connectivism is the idea that learning takes place across networked communities and information technologies (Dunaway 2011: 675). Connectivism sees learning as residing outside oneself, which can be within an organization or a database, where learning is focused on connecting specialized information sets, where the connections that enable learning are more important than the current state of knowing. Connectivism is the ability to learn from both animate and non-animate sources. The nurturing and

maintaining of connections are required to facilitate continual learning. Current and accurate knowledge is the intent of connectivist learning activities. Connectivism also sees decision-making as a learning process. The starting point of connectivism is the individual where personal knowledge comprises of a network, which feeds into organizations and institutions, back into the network, then continues to provide learning to the individual. Connectivism emphasizes the importance of the ability to be able to recognize connections, patterns and similarities and the ability to synthesize ideas and information (Dunaway 2011: 676).

Advances in technology have forced the twenty-first century student to process and apply information in a very different way and at a different pace than was the case in previous centuries. The span of time between learning something new, being able to apply it and finding that it is outdated and no longer useful, continually decreases. Gonzalez (2004) refers to this as the “half-life of knowledge” which is the time span from when knowledge is gained until it becomes obsolete. The cycle of knowledge development, from personal to network to organization, enables students to remain current in their field through the connections they have formed. Students create knowledge as they attempt to understand their experiences (Siemens 2004). Siemens’ (2004) theory also acknowledges that real-life learning is messy and complex and that acquisition of knowledge takes place in a nonlinear manner.

However there are criticisms of connectivism (Kerr 2007; Kop and Hill 2008 and Verhagen 2006). Kerr (2007) challenges the emphasis that Siemens (2004) places on the currency of knowledge as this obliterates the durability of knowledge and that at a given time or for a given purpose, some knowledge can be more important regardless of how old it is. Kop and Hill (2008) explore whether connectivism is a learning theory by examining elements that must exist to qualify something as a theory and distinguishes between “theory” and “developmental theory” and suggest that Siemens’ connectivist model “is a ripe training ground for further studies” (Kop and Hill 2008). Verhagen (2006) suggests that connectivism is “not a learning theory, but a pedagogical view on education”; he sees connectivism as a model to support pedagogy and curriculum rather than a substantive learning theory. Verhagen (2006) also suggests that the major principles of connectivism are already present in established learning theories. The researcher has taken cognizance of the criticisms of connectivism as a learning theory. However, the researcher believes that connectivism is relevant to this study and has a role in this study despite the criticisms. Although established learning theories such as behaviourism, cognitivism and constructivism are invaluable in

understanding how humans interact and function in their environments and that educators can still use these theories to guide their teaching and certain learning activities, these theories, it must be admittedly, were developed when there was not such a huge impact of technology on how we learn, how we live, work and communicate. In the present environment that is deeply rooted in technologies where information and knowledge are abundant, the ability to rapidly evaluate knowledge is important. The ability to synthesize and recognize patterns and connections and to distinguish between important and unimportant information is a valuable skill (Siemens 2004). In the LIS environment many of the cognitive operations that were previously performed by humans such as information storage and retrieval is now performed by technology. Siemens (2004) purports that learning can reside outside oneself (within an organization or database) and is focused on connecting “specialized information sets and the connections” that enable us to learn more and are more important than what we know currently. Furthermore, knowledge that exists in databases needs to be connected to the “right people” in the correct context in order to be classified as learning. Behaviourism, cognitivism and constructivism do not address the challenges faced by “organizational knowledge and transference” (Siemens 2004). Since the LIS sector is deeply rooted in the digital environment, connectivism is considered as part of the theoretical framework for this study.

Behaviourism, cognitivism and constructivism may be seen as traditional learning paradigms that are used as benchmarks against which learning processes are measured. It is important to note from the preceding discussion that the learning environment comprises of elements of behavioural, cognitive, social and constructivist learning theories. The learning theories are aligned to all forms of learning and learning styles, for example, active learning is an iterative process and advocates constructivist ideologies and may not be aligned with behaviourist stimulus-response beliefs. E-Learning programmes initially relied on behaviourist pedagogical practices; however, the opportunities for interactions in online learning environments have served as a catalyst to move towards constructivist approaches (Kanuka, 2002: 170). There is a need to transform education from a teacher-centred behaviouristic model to a learner-centred constructivist model by empowering educators to empower learners through the integration of ICTs into all aspects of the teaching and learning process (Beyers 2009: 224). The shift from behaviourism to more constructivist views of learning changes how one conceptualizes knowledge creation, where *participation* is emphasized rather than *acquisition* (Sfard 1998: 5). However the impact of technological advancements on teaching and learning needs to be taken into consideration. Although behaviourism,

cognitivism and constructivism were developed at a time when teaching and learning was not impacted upon by technology (Siemens 2004), these theories do not become obsolete; they need to be used in a very different way to incorporate the present teaching and learning environment. For the current study, it is important when developing the framework for blended learning for the delivery of Library and Information Science curricula, to incorporate learning theories as pedagogical tools that would offer pointers to the development of teaching and learning practices that are embedded in instructional content that the educators will understand. Learning theories can inform educational design and facilitation as well as educators' preparation in the roles and techniques of blended learning facilitation. Furthermore, existing learning theories will enable educators to understand how learners acquire and develop knowledge in a blended learning environment and they will therefore be better equipped to design and facilitate blended learning interventions.

It is also important when designing blended learning instructional content that this should cater for different learning styles, which also needs to be aligned to appropriate learning theories. A review of learning theory literature suggests that learning style and preferences influence the effectiveness with which students learn; therefore knowledge of students' learning styles and preferences can assist educators in choosing the correct or most appropriate methods of instruction for students (Saeed, Yang and Sinnappan 2009: 98).

2.3 Learning styles/learning preferences

Learning style may be defined as the combination of cognitive, emotional and physiological factors that determine each individual's most effective process for learning. A variety of systems exist for categorizing these factors into standardized classifications. Since different people have different learning styles, it is essential to provide a variety of instructional approaches, learning material and activities (Association for Quality and Participation [USA] 2003: 31-32). Learning styles may therefore be seen as the description of a process or a preference in learning. For the purpose of this study the terms learning styles and learning preferences are used interchangeably.

Learning style may also be seen as an individual difference that is most related to a student's preferences. Although these preferences may be varied they can be adapted by the student to adjust to divergent teaching and instructional settings and also accommodated by educators in their style of presentation (Butler and Pinto-Zipp 2006: 216). A correlational study of learning styles and learner satisfaction done by Henry (2008: 410) indicates that the visual

side of the visual-verbal dimension of students' learning styles was positively correlated to satisfaction with themselves as learners in a blended course delivery mode and negatively correlated to satisfaction with the classroom environment in the context of a traditional classroom delivery mode. It must be noted that the validity of learning styles has also been challenged (Pashler et.al 2008). However the researcher takes cognizance that addressing the learning needs of students is complicated as several variations such as prior knowledge, experience and skill level need to be factored into the learning style equation (Felder and Solomon nd); but the learning needs of students should be addressed. The importance of applying learning styles to this study is to match students' preferences with the design and type of teaching instruction in order to improve the students' satisfaction and other outcomes such as students' performance.

Web-based training (WBT) is growing and academics are placing course material online to supplement their traditional in-class instruction. Many course management systems provide a general "one-size-fits-all" approach which does not take into account the needs and learning styles of different learners (Liegle and Janicki 2006: 886). This may also sometimes hold true for traditional face-to-face instruction. The growth in the use of learning technologies, particularly the use of Web-based technologies and communications have offered educators more opportunities to investigate the most suitable environments to accommodate their students' learning styles (Akkoyunlu and Soylu 2008: 183). Research also indicates that the use of mobile video increases participation in the learning process, and is able to deliver positive outcomes for students with different learning styles (Apperley and Walsh 2010:126). Felder and Solomon (nd) state that the "ideal balance among learning style categories depends on the subject, level, and learning objective of the course and the backgrounds and skills of students". This study aims at including learning styles into the blend without expecting a particular solution when addressing the learning style preferences of LIS students but rather to get LIS educators to take cognizance of learning styles of LIS students and to align them with appropriate learning theories, the subject taught, the level of study and learning objectives in the design, implementation and facilitation of blended learning interventions.

2.3.1 Examples of the different learning styles and learning style inventories

Students and educators need a starting place for thinking about and understanding how individuals learn. Any learning style inventory, that encourages students and educators to

think about and understand how individuals learn, is a step towards understanding and improving teaching and learning (Fleming and Baume 2006: 4). Educators' understanding of students' learning styles can improve their choice of instructional delivery (Fang 2002:35). Therefore logically if mismatches exist between the teaching method and learning styles then students may become inattentive in class, fail exams or drop out. Similarly educators using insufficiently responsive teaching methods can be faced with bored, unresponsive students, low test and exam marks, poor attendance and dropouts (Alkhasawneh et al. 2008: 574).

There are numerous instruments that have been developed to identify or measure individual student differences and learning styles. These include Myer-Briggs Type Indicator, Index of Learning Style, Gregorc's Style Delineator, Kolb Learning Style Inventory and the Keirsey Temperament Sorter (Lin and Overbaugh 2007: 400). The Kolb Learning Style Inventory categorises students in terms of combinations of active-reflective and abstract-concrete preferences; the VARK Learning Styles Test identifies preference for visual, aural, reading or kinesthetic presentation of information; the Learning Styles Questionnaire classifies learners as activists (impulsive and enthusiastic), reflectors (cautious and thoughtful), theorists (disciplined and rational) or pragmatists (confident and realistic) (Johnson 2007: 619). All the learning styles or learning preferences and learning style inventories are not discussed here as this is beyond the scope of this study. Therefore, only a few learning styles and learning style inventories that have the potential to be useful for blended learning in higher education, are discussed.

2.3.1.1 Felder and Soloman learning styles

Felder and Soloman (nd) developed a system for determining learning styles of students. This system has been proven useful in understanding the way students learn and ways in which educators can cater instruction towards the different learning styles of students (Association for Quality and Participation [USA] 2003: 31). Learning styles may be categorized by types of learners:

- *Active and reflective students.* Active students retain and understand information by doing something active with it like discussing or applying it or explaining it to others while reflective students prefer to think about it quietly first. Active learners tend to like group work more than reflective learners, who prefer working alone. Sitting through lectures just taking down notes is difficult for both learning types, but more difficult for active learners. Students may sometimes be active and sometimes

reflective. Their preference for a particular category may be strong, moderate or mild. It is desirable to have a balance of both. Educators can cater to active students by including group work and reflective exercises (such as writing summaries of articles or class notes) for reflective students.

- *Sensing and intuitive students.* Sensing students like learning facts while intuitive learners often prefer discovering possibilities and relationships. Sensors prefer solving problems using well-established methods and do not like complications and surprises. Therefore sensors resent being tested on material that is not explicitly covered in class. Sensors do not like courses that have no apparent connection to the real world while intuitors do not like courses that involve a lot of memorization and routine calculations. Sensors tend to be more practical and careful (this would be useful for LIS students in subjects such as cataloguing and classification) than intuitors who tend to work faster and like being more innovative than sensors. Being both sensing and intuitive can be effective especially in problem solving. Educators can use real life examples or procedures and case studies to show students how concepts apply in practice, to cater for sensing students. Educators should provide interpretation of theories that link facts and ask students to find the connections, to cater for intuitive students.
- *Visual and verbal students.* Visual learners remember best what they see, for example pictures, diagrams, flowcharts, time lines, films and demonstrations. Verbal learners get more out of words such as written and spoken explanations. More learning takes place when information is presented both visually and verbally. Most face-to-face lectures have very little visual information presented. Students usually listen to lectures and read material on the chalkboard, in textbooks and handouts. However most students are visual students and do not get enough visual presentations being used in class (Felder and Soloman nd). Educators need to use pictures, diagrams and interactive multimedia to cater for visual students. More learning takes place when information is presented both visually and verbally (Felder and Soloman nd).
- *Sequential and global learners.* Sequential learners tend to gain understanding in linear steps, with each step following logically from the previous one. Global learners tend to learn in large jumps, absorbing material randomly without seeing the connections and then suddenly making the connection. Most students in the higher

education context are taught in a sequential manner (Felder and Soloman nd). However when educators do jump around from topic to topic or skip key steps, sequential students may have difficulty following and remembering the content taught. Global thinking skills can be strengthened by relating new topics with the topics that the student knows already as this will foster deeper understanding (Felder and Soloman nd). Educators can also present the big picture of a subject first before introducing details and making connections to cater for global learners.

(Association for Quality and Participation [USA] 2003: 31-32; Felder and Soloman nd)

The Index of Learning Styles (ILS) developed by Felder and Silverman (1988) classifies students along four dimensions:

- Active versus reflective;
- Visual versus verbal;
- Sequential versus global; and
- Sensing versus intuitive.

The Felder and Silverman model was subsequently used by Felder and Soloman (nd) to develop a questionnaire-based assessment known as the Felder-Soloman Index of Learning Styles (ILS). This instrument could be useful for higher education institutions for the following reasons:

- It has established reliability and validity especially with regard for its intended purpose of identifying learning styles (Henry 2008: 411; Johnson 2007: 620);
- It was developed for the college populations (Johnson 2007: 620);
- The ILS is freely available online and easy to use. The free Web-based questionnaire also has an automatic reporting feature, and the accompanying descriptive and prescriptive information provided by its authors (Henry 2008: 411);
- It can be easily administered to large groups (Johnson 2007: 620);
- It is simple to score and interpret (Johnson 2007: 620); and
- The ILS is a comprehensive measure of learning style which includes most dimensions assessed by other tests, for example, active-reflective and abstract-

concrete dimensions of the Kolb Learning Inventory are represented by two dimensions on the ILS (active-reflective and sensing-intuitive).

2.3.1.2 Kolb Learning Style and Learning Style Inventory (LSI)

Kolb's model is based on the experiential learning theory that outlines concrete experience and abstract conceptualization relating to experience and reflective observation and active experimentation approaches towards transforming experience. According to Kolb's model, the learning process engages a combination of experience, perception, cognition and behaviour in response to a particular situation (Uğur, Akkoyunlu and Kurbanoglu 2011: 8). Learning methods applied in each learning style differ, for example, learning through experience is suitable for concrete experience; learning through observation is suitable for reflective observation; learning through thinking is suitable for abstract conceptualization and learning by doing is suitable for active experimentation where the priority is learning through experience rather than theory and generalizations (Uğur, Akkoyunlu and Kurbanoglu 2011: 9). The learning styles in Kolb's model can be categorized as: accommodators, convergers, divergents and assimilators. The 'accommodator' learning style includes concrete experience and active experimentation. Individuals that prefer this learning style, learn by doing and feeling and perform well when they are required to react to immediate circumstances and can solve problems intuitively. The 'converger' learning style includes learning characteristics that include both abstract conceptualization and active experimentation. Individuals that prefer this learning style are strong in practical application of ideas, solving problems and making decisions and prefer technical tasks and problems to social relations. The 'divergent' learning style includes learning characteristics that are suitable for individuals with high scores in the areas of concrete experience and reflective observation. Individuals that prefer this learning style are strong in their imaginative ability, good at generating ideas and seeing things from different perspectives. The 'assimilator' learning style includes abstract conceptualization and reflective observation. These individuals have a strong ability to create theoretical models, excel in inductive reasoning and are concerned with abstract concepts rather than people. The characteristics of these individuals can be developed through "conducting research on the organization of information, establishing conceptual models and confronting ideas and theories, designing tests and conducting data analysis" (Uğur, Akkoyunlu and Kurbanoglu 2011: 9-10). It must be noted that learning styles are not constant and can change over time. It is therefore imperative that suitable teaching methods and

strategies are adopted taking into account the different learning styles catering for a range of learning styles.

The Kolb Learning Style Inventory is argued to be a useful instrument for the study of learning styles that examine dimensions of comprehending (concrete experience vs abstract conceptualization) and transforming (reflective observation vs active experimentation). Liegle and Janicki (2006: 890) show that a high score in reflective observation indicates a “tentative, impartial, and reflective” approach to learning, where the learners rely on observation in making judgments and prefer lectures that allow the role of impartial objective observers.

2.3.1.3 VARK

The VARK survey tool was created in 1998 as a means of assessing learning style preferences to inform “dialogue between students and educators” (Alkhasawneh et al. 2008: 575). VARK is an acronym for Visual, Aural, Read/Write and Kinesthetic. Visual students tend to prefer an explanation of concepts diagrammatically or through pictures. Read/Write students prefer printed words and text as a means of information intake. These students prefer to arrange class lecture notes into outlines and work through past exam papers as a study method. Aural learners focus on what educators say. Aural students may talk about their answers or listen to taped discussion such as podcasts about course content. Kinesthetic students use experience and practical examples in order to learn (Fleming nd). There are overlaps and similarities from the Felder and Soloman and Kolb learning styles in VARK.

The VARK questionnaire consists of thirteen multiple choice questions. Ten questions have four choices and three questions have three choices. All choices correspond to the four sensory modalities (Visual, Auditory, Read/Write and Kinesthetic) measured by VARK (Alkhasawneh 2008: 576). The aim of the questionnaire is to begin a process of thinking about how students prefer to learn thereby acting as a catalyst for metacognition (Fleming and Baume 2006: 5). The VARK inventory provides feedback on preferred modes for communicating. These preferences can be matched with strategies for learning. According to Fleming and Baume (2006: 5) the main ideas and sources that informed VARK were that:

- Modal preferences influenced individuals (both students and educators) behaviours, including learning;

- Both students and educators can reliably identify and provide examples of their use of a particular modality preference in learning;
- Modal preferences are not fixed but are stable in the medium term;
- Modal preferences can be matched with strategies for learning and strategies for teaching;
- Information that is accessed using strategies that are aligned with student's modality preferences are more likely to be understood and to be motivating;
- The use of teaching and learning strategies that are aligned with the student's modality preferences is likely to lead to persistence in learning tasks, a deeper approach to learning and effective metacognition; and
- Knowledge of and acting on one's modal preferences is an important condition for improving one's learning.

The Alkhasawneh et al. (2008: 578) study claims that most students were able to learn effectively when the educator provided different learning activities in the areas assessed in VARK, namely Visual, Auditory, Read/Write and Kinesthetic. Fleming and Baume (2006: 6), however, purport that teaching often reflects the teacher's preferred teaching style rather than the student's preferred learning style.

2.4 Learning theories and learning styles in teaching and learning

A review of the learning theories literature suggests that learning styles have an influence on the effectiveness with which students learn (Saeed, Yang and Sinnappan 2009: 98). Research has also established that by adapting the learning content to the individual learner, the learning outcome can be improved. It was also found that when the teaching style is adapted to the learner by using both the behaviourist and constructivist approach to the learning/personality style, the amount of learning will increase (Liegle and Janicki 2006: 888). The researcher is of the opinion that it is not only Web-based curriculum designers and developers that should take cognizance of the learning styles of students but also educators using traditional methods of teaching and learning.

Technology can be used as a tool to address different learning styles through the use of collaboration, media and discussion. Technology can be used in blended learning where students are engaged in a self-directed learning process in which they construct meaning through exploration and experimentation (Pang 2008: 6). The blended learning environment

includes both synchronous and asynchronous methods of content delivery and communication. There is a growing body of research that clarifies the learning benefits of synchronous and asynchronous text-based communication (Johnson 2006: 49). Students are able to access the wisdom of experts from all around the world using the Internet, text messaging, Blogs, Wikis, etc. Access to mobile learning devices and educational portals are used to suit the learning styles of many learners (Beyers 2009: 223). A study by Downing and Chim (2004: 265) show that those students' reflector learning styles that might be realized as introverted behavior in a traditional classroom, are observed as more extroverted in the asynchronous online discussions of an online course where they have time to reflect on what they are learning. Blended learning could enable students to take their preferred route to learning through a mixture of learning activities that appeal to a wide range of learning styles. In practice, however, it is not always possible to design blended learning programmes that cover all the learning style preferences at all times. Felder (2010) states that although educators cannot design instruction to cater for all the learning styles, they need to strike a balance, making sure that the student's learning style preference is addressed to a reasonable extent during instruction. Blended learning programme designers can attempt to meet the needs of different learning style preferences at some stage in the learning process (Allan 2007: 51).

2.5 Frameworks for blended learning

Educators need to find order and a means to construct the rationale for adopting or developing particular instructional strategies to meet the objectives of the courses. Educators should not randomly search for what may work with little understanding of what was successful or not. Knowing why a particular strategy works makes the exercise of teaching and learning more meaningful. A coherent framework avoids the "tyranny of adopting clever techniques" and the distortion that may arise from the separation of theory and practice (Garrison and Vaughan 2008: 13). Khan's Octagonal Framework and the Community of Inquiry (CoI) frameworks are discussed in this section.

2.5.1 Khan's Octagonal Framework

'*A Framework for E-Learning*' was created by Badrul Khan (2003). Badrul Khan's e-learning framework which is also referred to as Khan's Octagonal Framework (because of its octagonal shape representing the eight dimensions of the e-learning environment) provides a framework that enables educators to select appropriate ingredients for flexible learning

environments (Khan 2003). While Khan's Octagonal Framework (Khan 2003) focuses primarily on e-learning, Singh (2003) adapts this framework to focus on blended learning. Khan's framework can serve as a guide to plan, develop, deliver, manage and evaluate blended learning programmes (Singh 2003: 52).

Khan's framework consists of eight dimensions – refer to Figures 2.1 and 2.2. The framework has eight dimensions namely: institutional, pedagogical, technological, interface design, evaluation, management, resource support and ethical. Each of these dimensions in the framework represents a category of issues that need to be addressed in order to create a meaningful learning experience (Singh 2003).

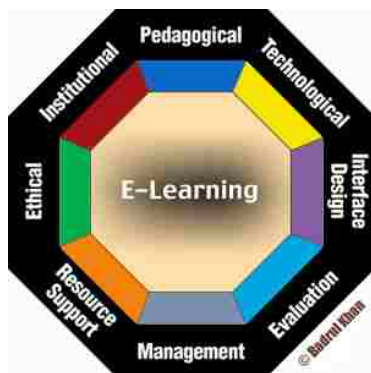


Figure 2.1: Khan's Octagonal Framework (2003)

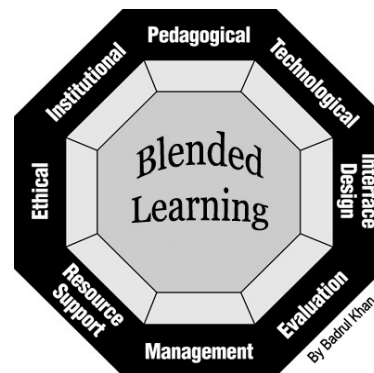


Figure 2.2: Khan's Octagonal Framework adapted by (Singh 2003)

The **institutional** dimension is concerned with issues relating to organizational, administrative affairs, academic affairs and student services with reference to matters of education. Staff involved in designing and implementing blended learning programmes should consider the preparedness of the organization, availability and structure of content and infrastructure as well as the students' needs. A needs analysis should be conducted to ascertain the needs of the students (Singh 2003).

The **pedagogical** dimension refers to teaching and learning needs. This dimension addresses issues concerning content that has to be delivered (content analysis), student needs and learning objectives. This dimension also encompasses the design, organization and methods and strategies of blended learning environments. The learning goals or learning outcomes need to be listed and the most appropriate delivery method is chosen (Singh 2003).

The **technological** dimension examines issues of technology infrastructure used in blended learning environments, particularly the e-learning aspects. This includes infrastructure planning such as servers that support the learning programme, bandwidth and accessibility, security and hardware and software. This includes creating a learning environment with the appropriate tools to be able to deliver a learning programme (Singh 2003). This dimension also addresses the need for finding the most suitable learning management system that could manage multiple delivery types and a content management system that catalogues the learning content for the learning programme (Amalou 2006: 7).

The **interface design** refers to the overall look and feel of the blended learning programme. Educators need to ensure that the user interface supports all the elements of the blend. The **interface design** dimension, encompasses page and site design, content design, navigation, and usability testing. The user interface needs to support all the elements of the blend. It has to be able to integrate the different elements of the blend, which will enable the student to use the different delivery types as well as switch from one delivery type to another. Issues relating to content structure, navigation, graphics and 'help' features are also addressed in this dimension (Singh 2003).

The **evaluation** dimension includes both assessment of learners and evaluation of the instruction and learning environment. Singh (2003) portrays this dimension as being concerned with the usability of blended learning programmes. Programmes should have the capability to evaluate the effectiveness of a learning programme as well as evaluating the performance of the students. Each delivery type should be evaluated in blended learning programmes, using an appropriate evaluation method.

The **management** refers to the issues related to the management of blended learning programmes, such as infrastructure and logistics required to manage multiple delivery types. This dimension also addresses maintenance of learning environment and distribution of information, registration and notification and scheduling the different elements of the blend (Singh 2003).

The **resource support** dimension examines the online and offline support and resources required to foster meaningful learning environments. Resource support could also include counselor/tutor that is available in person, via e-mail or on chat systems (synchronous communication) (Singh 2003).

The **ethical dimension** identifies the ethical issues that need to be addressed when developing blended learning interventions. Issues such as equal opportunities, cultural diversity, bias, geographical diversity, information accessibility, etiquette, and legal issues such as copyright are also addressed in this dimension (Singh 2003).

2.5.2 Community of Inquiry (CoI) Framework

Garrison and Vaughan (2008: 14) describe the Community of Inquiry (CoI) as the “heart of higher education experience” and are shaped by “purposeful, open, and disciplined critical discourse and reflection”. The purpose of the CoI framework is to guide the use of instructional technologies in “creating and sustaining deep and meaningful learning through reflection and discourse in online and blended learning environments” (Garrison and Akyol 2009: 23). The three interdependent elements present in the CoI framework are teaching presence, cognitive presence and social presence.

The areas of responsibility for the teaching presence includes, design, facilitation and direct instruction for realizing meaningful and educationally sound learning outcomes. Instructional technologies expand the teaching presence. The use of Web 2.0 technologies lead to designing innovative, challenging and collaborative learning environments and activities. New technologies also facilitate means for communication and interaction between students and educators. Direct instruction can be implemented by obtaining information from diverse sources in different forms using emerging technologies (Garrison and Akyol 2009: 23).

The cognitive presence element of CoI exists in an “environment that enables students to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry” (Garrison, Anderson and Archer 2001: 11). The main contribution of the cognitive presence is its affordance of collaborative information discovery and creation (Garrison and Akyol 2009: 24). Enabling students in higher education to construct meaning and engage in reflection and critical discourse could contribute to establishing higher order thinking skills.

The social presence can be seen as the ability of participants “to identify with the community, communicate purposefully in a trusting environment and develop inter-personal relationships” (Garrison and Akyol 2009: 24). The social presence also refers to the ability of participants in a community of inquiry to express themselves socially and emotionally

showing their full personality through whatever means of communication that is being used (Garrison, Anderson and Archer 2000: 94). Communication features that can be found in Web 2.0 technologies that allow participants to interact and communicate affective responses in both synchronous and asynchronous formats encourage social presence. Social networking sites can support the development of social presence by providing ways of self-disclosure or to express emotions, leading to a learning environment where students can feel comfortable in the learning process (Garrison and Akyol 2009: 24).

Garrison and Akyol (2009: 25) stress that the creation of CoI is a complex and challenging educational task and in the higher educational context depends on the intelligent use of instructional technologies. In the present higher education context the most practical means of creating communities where students can meaningfully engage in collaborate knowledge construction, as opposed to the passive transmission of knowledge from educator to students, is through the use of instructional technologies. Instructional technologies however must be able to support teaching presence, cognitive presence and social presence in a way that it can be integrated to create sustainable communities of inquiry.

In this study the various aspects of the teaching presence, cognitive presence and social presence will be examined in relation to the learning theories that could be used to develop a framework for blended learning for LIS education and training.

2.6 Summary

This chapter discussed the relevant theoretical principles that frame the study. The points of entry for this theoretical framework were the various learning theories and their relevance to blended learning. Different learning styles and learning style inventories were explored because they could be aligned to the learning theories and instructional design of blended learning interventions. Finally, the researcher considered Khan's Octagonal Framework (2003) that was adapted by Singh (2003) for blended learning, and the Community of Inquiry framework, from which certain aspects could be useful in developing an appropriate framework for the use of blended learning in the delivery of Library and Information Science curricula in South African universities. The next chapter reviews literature related to blended learning, particularly in the higher education context.

Chapter 3: Review of Related Literature

3.1 Introduction

This chapter reviews the existing body of scholarship that is relevant to the critical questions that have been raised by the research problem, with the objective of researching the key areas that relate to the study. Reviewing the literature is an essential part of the research process that generates ideas and helps to form critical questions in the process of research design (O'Leary 2004: 83). The researcher explored current teaching and learning practices with a focus on technology enhanced teaching and learning. Teaching methods and modes of delivery used in the higher education context are also be examined for the purpose of establishing appropriate teaching methods and modes of delivery for the design and facilitation of blended learning interventions.

The field of study for the present research is the use of blended learning in higher education, with the objective of exploring the educational and pedagogical issues relating to blended learning. The literature review enabled the researcher to examine the nature and scope of blended learning, including the use of blended learning across available related disciplines nationally and globally. The researcher also needed to establish what research has been done with regard to blended learning, particularly in the higher education sector. The review of the literature also helped the researcher to identify and discuss various methods and approaches to blended learning by other researchers in the field as well as to identify the gaps and further contributions relating to the use of blended learning in the delivery of LIS curricula in South African universities.

Since the study's focus is on developing a framework for blended learning in the delivery of LIS curriculum, literature related to LIS education and training in an international context as well as in the South African context was explored. It is necessary to ascertain the theoretical and practical aspects in designing an effective blended learning framework for the meaningful delivery of LIS curricula in South African universities.

3.2 Trends in teaching and learning in the twenty-first century

Most young people today have not experienced life without computers and cell phones to communicate. This generation therefore expects to participate in all facets of life through the media with more time being spent on computers and the Internet. Traditionally the theory of knowledge lay in the notion that the educated person knows something about all the great

books in a particular area of study (Beyers 2009: 218). Presently there are various other forms of knowledge available apart from books, the Internet being one of these forms. Today's students have the opportunity to direct their own education. Students need to take greater responsibility for their learning. The educator, being in control of the education process, also has a vital role to play, as a facilitator rather than physically dictating what happens in the learning interface. There should be greater emphasis on self-discovery after basic skills have been acquired. Higher education institutions are becoming increasingly aware that students are seeking new and innovative ways to meet their educational requirements. Educators in higher education institutions need to address issues by introducing innovative ways of teaching and learning. Introducing blended learning could be one of the means of improving the quality of teaching and learning in higher education.

Traditionally the goals of teaching in higher education have been the acquisition of knowledge, scholarship and the development of enquiring minds. The focus however has changed to professional, technological and vocational considerations (Knott and Mutunga 1995: 115). Higher education has also seen changes in student mobility, programme mobility, long distance educational delivery and the global trend of escalating student enrollments. The student population at higher education institutions (HEIs) has also changed to include single and married, full-time and part-time, employed and unemployed, residential and non residential students. The changing demographics of students, new acquired knowledge skills sets, new educational competitors and as well as the advances in technologies driving the adoption of new delivery systems that bridge the time-place gap that traditional courses have created, has influenced HEIs to offer flexibility in course offerings. Additionally, educational delivery via the Internet has resulted in an increasing number of computer users acquiring personal computers with increased capabilities of telecommunications, driven by global access and mobility capacity has also influenced HEIs to offer flexibility in course offerings (Azizan 2010: 456).

Globalization is another significant force that is contributing to the shift to a knowledge based society and the growing demand for information and knowledge in higher education. Advances in information and communications technology (ICT) have produced the "information age" or "knowledge society" (Moyo 2003: 497). Higher education can be seen as building the knowledge base through research efforts, applying theoretical constructs and discovering innovations to adapt to a situated context. This knowledge base can be transmitted through teaching and learning (Chetro-Szivos 2010: 5). The higher education and

training landscapes have also been transformed in the past decade by drivers such as rapid developments in information and communications technology, the move to a 24/7 culture, changing patterns of work and leisure, increased and changing expectations of stakeholders. The introduction of technology into professional education can have a profound impact on the processes of teaching and learning (Singh Cooner 2010: 274). Education programmes are constantly changing and developing, and in recent years the rising interest in e-learning has expanded and shifted its focus so that many educators are now concerned with blended learning programmes (Allan 2007: 2).

Advancements in communication and information technologies have also exerted its influence on education (Aboukhatwa 2012: 1061). The twenty-first century has seen a trend towards rethinking the purpose of teaching and learning especially in the context of current teaching and learning strategies using technology enhanced teaching and learning. Many higher educational institutions have incorporated technology to improve instruction and have used substantial resources to integrate technological infrastructure into existing classroom facilities (Delaney et al. 2010: 8). The needs of students are constantly changing and they expect technology-rich and flexible learning opportunities (Allan 2007: 2).

There has been an increasing shift to student-centred learning, which has been identified as more effective in terms of students adopting deep learning approaches. Also current educational theory and research reflect a shift from 'transmission' style pedagogy to task-focused constructivist pedagogy that engage students in the process of dialogue, feedback, reflection, collaboration and participation in learning communities (Black and Roberts 2006: 83-84). Some universities are identifying pedagogical, environmental and organizational factors that are impacting on the universities' decisions to diversify course delivery across more than one location or mode of delivery (Smith, Ling and Hill 2008: 295). African universities are also facing pedagogical, environmental and organizational factors that are impacting on higher education. Universities are put in the spotlight as they are accountable to the students, society and the state and therefore are required to improve teaching and learning, which includes teaching methods. Socio-economic factors and political pressure have led to increased student numbers, fewer resources and new demands from state and society (Knott and Mutunga 1995: 115). The socioeconomic status of African people and the conditions in which some African universities function are different from more developed countries. There are particular factors that affect students attending African universities. Many students that attend African universities come from schools that are located in rural

areas. They are required to adapt to a new environment that is more time-conscious; structurally complicated and more technology orientated. The language of instruction, particularly if it is not the student's native language, also poses challenges for students. Other factors include students' attitude towards learning and education in general. If students do not relate learning to their interests and abilities or when they do not see learning as a continuous process, instruction can become difficult (Wole 1995: 72). Higher education institutions in Africa that experience the above conditions should take these into consideration when planning their curricula and methods of teaching.

While there is no universally acceptable model for classifying teaching methods, Knott and Mutunga (1995: 117), however, highlight two main strategies for teaching methods. The first is direct instruction with the educator mostly "telling" and the students passively listening and taking notes. The emphasis of this approach is the transfer of information for students to memorize and reproduce. The second strategy is indirect where the educator facilitates the learning process by posing questions, guiding, indicating sources of information and sharing ideas, problems and solutions. Effective teaching practices are important for higher education; therefore educators need to develop quality learning environments that will foster students' success.

3.2.1 Methods of teaching

Methods of teaching are a set of educators' systematic actions to enable educators to reach learning objectives in a limited time frame. Methods of teaching also describe conceptually the instructional process which includes how information is transmitted from educator to student, as well as how the student uses it; interacts with it; receives guidance and is given feedback (Knott and Mutunga 1995: 113). Teaching models prescribe tested steps and procedures to effectively generate desired outcomes.

Choosing the correct method of teaching is vital as it has an impact on the quality of the student learning. The type and level of learning; the time available; the facilities and the class size are some of the factors that need to be considered when choosing an appropriate teaching method (Knott and Mutunga 1995: 113). Deciding whether or not a particular teaching method or model is appropriate also depends on other factors such as, the type of subject matter, for example, theoretical versus practical, technical versus non-technical etc.; the competencies and personal preferences of the students and the educators; the prior experiences of the students; the expectations of the students with regard to the pedagogical

methods to be employed and, finally, the maturity and study skills of the students (Roberts and Jones 2000: 3).

It should be noted that a single method need not be used exclusively. Educators should become skilled in several methods of teaching and learning. Some educators become comfortable with a particular philosophy of teaching and learning. While there are a variety of teaching methods and models, literature on a few methods that are applicable to higher education are discussed.

3.2.1.1 Lecture method

The lecture is an educator-directed model. It is top-down, educator delivered with primarily 'direct' instruction. Classroom teaching or the lecture method still remains the dominant mode in the higher education setting. Most higher education academic staff still rely heavily on lectures and seminars as the main and time-honoured means of disseminating knowledge and maintaining some sense of staff/student contact (Azizan 2010: 456; Sweeney, O'Donoghue and Whitehead 2004: 312). Many higher education institutions offer education programmes that are primarily classroom-based and contain a large amount of information that must be transferred to students. The lecture method can be considered cost effective in terms of staff/student ratio. This method can be ideal for introductory or overview purposes. The weakness of this method is that it is strongly dependent on the skill of the educator. It is not suitable for developing communication and interpersonal skills; psychomotor, higher cognitive and affective objectives. Student involvement is low or non-existent (Knott and Mutunga 1995: 119). Whitston (1998: 316) criticizes the lecture method for encouraging passivity in students.

3.2.1.1.1 Advantages of the lecture method

According to Sellers et al. (2006) the lecture method gives the educator a chance to expose students to unpublished material or material that is not readily available. It allows the educator to precisely determine the aims, content, organization, pace and direction of the lecture. The lecture method can be used to arouse interest in a subject particularly when the educator can complement and clarify text material. Some students are dependent upon the structure that is provided by highly 'teacher-centred' methods which complements certain students' individual learning preferences. The lecture method also facilitates large class communication.

The traditional lecture is proven learning, with opportunities for interaction between the educator and students. Face-to-face conversations can be convincing with body language and expressions. The direct face-to-face interaction between the educator and students can foster a sense of community between educators and students, where the educator can respond to questions immediately, face-to-face. Using the lecture method also makes it easier for the educator to monitor, assess and evaluate students (Azizan 2010: 457).

3.2.1.1.2 Disadvantages of the lecture method

The lecture encourages one-way communication, places students in a passive role rather than an active role, which may hinder learning. The lecture method requires students to spend a considerable amount of unguided time outside the classroom to enable understanding and long-term retention on learning content whereas interactive methods such as discussion and problem solving sessions, allow the educator to guide students when they are actively working with the learning content (Sellers et al. 2006). The lecture can be boring and passive if the educator is not well prepared and has ineffective speaking skills (Azizan 2010: 457).

3.2.1.2 Group discussions

Group discussions are ideal for developing interpersonal and group skills. It is a good method for introducing variety into a lecture and contributes towards maintaining student attention. Group discussions can include buzz sessions and similar short group sessions, class discussions in groups; seminars and tutorials; and group projects. Buzz sessions are good for introducing variety and helping to maintain student attention but needs a good facilitator. Students are actively involved and it allows for feedback. Class discussions enable relevant topics to be examined in depth (Knott and Mutunga 1995: 120). Working with groups can foster full participation in the learning experience by all members of the group for effective group discussions (Azizan 2010: 457).

The danger with class discussions, however, is that not all students take an active part in the discussion and the facilitator can dominate sessions. Group projects are ideal for developing interpersonal and group skills and for cross-disciplinary work. The dangers of group projects are that not all students contribute equally to the project and therefore assessments of contribution by individual students can be problematic (Knott and Mutunga 1995: 120).

3.2.1.3 E-Learning

E-Learning is defined as learning that is facilitated and supported via the use of information and communications technology. To further clarify the term e-learning: learning in environments where instructional materials are transferred electronically or through the Internet or through course software with the help of computer technologies in the teaching and learning environments and where the educator and the student may be in different physical environments. E-learning can also be defined as learning that occurs through the Internet, a network or only a computer and as audible, visual and interactive synchronous or asynchronous educational activities (Akkoyunlu and Soylu 2008: 183).

Tavangarian et al. (2004: 274) define e-learning as:

All forms of learning and teaching, which are procedural in character and aim to effect the construction of knowledge with reference to individual experience, practice and knowledge of the learner. Information and communication systems, whether networked or not, serve as specific media to implement the learning process.

As mentioned in Chapter 1, this definition by Tavangarian et al. (2004) is adopted for this study as this definition is based on the constructivist learning model. The focus of this study is on the educational aspects of blended learning that include a combination of different modes of delivery, models of teaching and styles of learning.

The adoption of online or e-learning has been prevalent in the higher education sector. E-Learning, also sometimes referred to as online learning, has varying definitions (as indicated above). For the purpose of this study the terms e-learning and online learning are used synonymously. E-Learning involves “the use of digital technology and media to deliver, support and enhance teaching, learning, assessment and evaluation” (Armitage and o'Leary 2003: 4). It can cover a spectrum of activities from the use of technology to support learning as part of a ‘blended’ approach (a combination of traditional and e-learning approaches), to learning that is delivered entirely online. Irrespective of the technology used, learning is the key element (Managing your digital resources 2010). It can also be seen as an alternative to delivery instructions in a learning environment that uses various media and ICTs, especially Web-related technology, to create, manage, and enable distributed learning synchronously and asynchronously with and without the presence of an instructor (Chin Kah 2006: 37). As mentioned in the definitions section of Chapter 1, e-learning may involve the use of some, or

all, of the following technologies: desktop and laptop computers; software, including assistive software; interactive whiteboards; digital cameras; mobile and wireless tools, including mobile phones; electronic communication tools, including email, discussion boards, chat facilities and video conferencing; Virtual Learning Environments (VLE) learning activity management systems (Managing your digital resources 2010).

3.2.1.3.1 Learning Management Systems (LMS)

LMSs are used primarily in e-learning applications. LMS is available in open source software as well as commercial software packages. Open-access (OA) literature is digital, online, free of charge, and free of most copyright and licensing restrictions. What makes it possible is the internet and the consent of the author or copyright-holder (Suber 2004). Examples of LMSs include Blackboard (WebCT) which is a commercially available software package and Moodle which is an open source software package. LMS is primarily used as a supplement to in-class lectures or for distance-learning. LMSs consist of course announcements, assessments, lecture notes and slides can also be posted electronically on the system. Learner guides, links to relevant readings for the course, online discussion forums, calendars, chat, email and any other course content can also be accessed on the LMS via the Internet. LMSs are used for various purposes, including distributing learning material, making timely announcements, making available online learning modules, and allowing discussions and feedback through tools such as discussion forums and chat-room (Farley, Jain and Thomson 2011: 99).

Currently, in the higher education scenario there is a move from using commercially available software to open source software as open source software development can provide the necessary flexibility to combine languages, scripts and lesson plans effectively without the cost and rigidity of commercial packages. (Georgouli, Skalkidis and Guerreiro 2008: 227). It must be noted, however, that LMSs are not only restricted for educational purposes; they can also function as a means of communication. Thus it can be seen that LMSs can be used on many levels, at the institutional level and at the educator level. In deciding to adopt use of a LMS to either redesign a traditional in-class course or to develop a new course one needs to, firstly, thoroughly study the tools that are provided by the chosen LMS and to ascertain how the tools can be used effectively to support the educational methodology and the learning objectives. Educators or facilitators also need to become familiar with the functionality of the software in order to be able to use the services effectively and

confidently. Education programmes in higher education institutions can be improved by using LMSs, which could improve the quality of the learning experience, increase the availability and accessibility of learning materials, support collaborative activities and strengthen the feeling of belonging to a community (Georgouli, Skalkidis and Guerreiro 2008: 227).

It is imperative that there is thoughtful integration of the best practices of face-to-face learning with e-learning for maximum educational benefits. The mix or the blend can be influenced by many factors such as course instructional goals, student characteristics, instructor experience and teaching style, discipline, developmental level, and online resources available (Osguthorpe and Graham 2003: 232-233). The objective of the current study is to explore these issues in blended learning for the development of a framework for designing and implementing blended learning in the delivery of LIS curricula in South African universities.

3.2.1.4 Distance education/Online education

Distance education also plays a significant role in higher education in South Africa. Distance education is seen as a mechanism for facilitating access, participation and redress. It affords access to a large diverse student population of both mature students and school leavers unable to access face-to-face universities and whose education needs might go unmet (South African Institute for Distance Education 2010).

The use of media and information and communications technologies contributed to changes in supplementing new teaching and learning tools. Increasingly, elements of personal contact were introduced into the teaching and learning process by using the telephone, audio and video media, audio conferencing, videoconferencing, simulated person-to-person interaction and learning management systems. The Internet seemed to offer unlimited possibilities not only for course delivery and for studying but also for interaction and collaboration and for administrative purposes. The terms ‘online education’, ‘electronic campus’, ‘online university’ or ‘virtual university’ became synonymous with the term “distance education” (Distance education 2007). Distance education also serves as a cost-saving alternative method of educational delivery (Charp 2000: 10). Distance education offers opportunities to individuals working in the Library and Information sector to earn degrees and those that already have degrees for continuing education (Tenopir 2000: 46).

Globally, distance education is transforming teaching and learning. Globalization and the knowledge society are placing increasing demands on higher education institutions to explore delivery modes that accommodate the needs of students in the global village (Moyo 2003: 498). Distance delivery of LIS programmes are increasing, using either synchronous, asynchronous or hybrid (Owen and Leonhardt 2009: 552) options.

3.2.1.4.1 Massive Open Online Courses (MOOCs)

MOOC is a fast developing educational model that is gaining popularity in higher education. MOOC is a technological innovation that is offering virtual educational opportunities to anyone who wants to participate in a massive grouping of students collaborating and producing content on a variety of platforms that include learning management systems, social media and websites using interactive online forums that can involve a number of students in peer-to-peer discussions as well as access to audio and video lectures and course material in online format (Jones 2014; Mallon 2013: 46). Examples of MOOCs that provide a variety of educational opportunities include Coursera (<http://www.coursera.org>), edX (<http://www.edx.org>) and Udacity (<http://udacity.com>). Most of the courses are completed at the students own pace, without formal assessments or deadlines and participants in some instances receive a certificate of completion at the end of the course (Mallon 2013: 47).

According to Lewin (2013) the range of collaboration and approaches to blended learning are growing rapidly as HEIs experiment with ways to use technology to increase accessibility, retain students and improve performance. Also, individuals are seeking independent study at HEIs but looking for opportunities that are not place bound. Therefore there is no way of predicting the future of instructional experiments like MOOCs.

MOOCs is becoming popular among higher educational institutions globally (for example, Yale, Michigan, Stanford, Minnesota, Florida, Virginia to name a few) as well as nationally, (University of Cape Town (UCT), to be offered in 2015) offering online courses to anyone in the world that has Internet access (Jones 2014). These online courses are designed for mass participation on the assumption that students would “drive their own education” (Jones 2014). However, Morris (2013: 252) cautions that “rigorous educational experiences that provide students with quality education” cannot be sacrificed.

Some criticisms of MOOCs are that there are too many students, low interactivity, and poor retention rates. With the large enrollment numbers there are also questions about the quality of the learning outcomes and the learning environment. The large dropout rate is attributed to the educational environment and the administrative structure, high numbers, open enrollment, no investment to enroll and the lack of academic credit for successful completion (Morris 2013: 252). Another concern for educators is that when universities sign contracts to licence MOOC content from providers such as Coursera or Udacity, educators might not be familiar or simply do not want to teach with the licenced content as this restricts the freedom of the educator to teach the way that he/she wants to, thus restricting the autonomy of the educator (Rees 2014).

3.2.1.5 Blended learning

Blended learning has become an emerging and prominent delivery mechanism and approach to course design in higher education. The core interest in blended learning lies in the need to provide more engaged learning experiences with recognizing the potential of the Internet and communications technology (Garrison and Vaughan 2008: 3-4). Information and communications technologies have had a profound impact in the Library and Information Science field particularly in using web-based applications and services. Bawden et al. (2007:14) confirm that the information environment is continually changing with advances in telecommunications and social networking featuring Web 2.0 and Library 2.0. The use of digital technologies requires thoughtful and thorough integration into pedagogy, in a manner that reflects carefully articulated instructional and learning goals (Apperley and Walsh 2010:125). The increasing use of the Internet and digital technologies by higher education students calls for a transformation of the teaching and learning environments in higher education settings. The impact of ICTs on the LIS sector, which includes e-content and Web.2.0 technologies, should also lead to changes in curriculum content as well as in methods of teaching and learning. One of the objectives of this study is to establish the pedagogical and educational benefits of blended learning.

Some of the reasons for developing blended learning programmes include: making teaching and learning more engaging, relevant and accessible; providing more flexible teaching and learning opportunities; reducing the time spent on face-to-face learning activities by shifting the balance to more blended learning activities; integrating practitioner-based experiences with classroom-based learning; exploiting ICT and training facilities; demonstrating the use

of leading-edge technologies; demand from users or other stakeholders; exploring new approaches to teaching and learning (Allan 2007: 2). One of the reasons in this study for developing a blending learning framework for LIS education is to offer guidelines for more flexible teaching and learning opportunities in LIS education and training, for example, that related to work experiences so that LIS programme graduates can be equipped with knowledge and skills relevant to the workplace.

3.2.1.5.1 Definition of blended learning

While there are many definitions for the term blended learning (as mentioned in Chapter 1), there is no consensus on the definition of term blended learning in the literature. According to Driscoll (2002) there are many approaches by which blended learning can be attained. Firstly, using a combination or mix modes of Web-based technology (live virtual classrooms, self-paced instruction, collaborative learning, streaming video, audio and text). The second is to combine various pedagogical approaches (for example, constructivism, behaviourism and cognitivism) to produce an optimal learning outcome with or without the use of instructional technology. The third is where any form of instructional technology (videotape, CD-ROM, Web-based training, film) is combined with face-to-face instructor-led training and, finally, the fourth is a mix of instructional technology with actual job tasks where a harmonious effect of learning and working is created. Graham (2004), drawing from a variety of sources, comprehensively defines blended learning as:

- Combining instructional modalities (or delivery media) (Singh and Reed 2001);
- Combining instructional methods (Driscoll 2002); and
- Combining online and face-to-face instruction (Reay 2001; Rooney 2003)

The first two aspects presented by Graham (2004) tend to be very broad and concentrate on the media used in the delivery of information and instructional methods. The combination of face-to-face and online instruction is a more widely used definition in most of the literature on the subject. On the one hand, we have the face-to-face learning environment where emphasis is placed on human interaction and on the other hand, we have the online learning environment with the emphasis on computer-based technologies. ICTs have had a huge impact on the online learning environment. It has lead to an increased level of integration and collaboration between online learning and traditional face-to-face learning. The present study needs to take into cognizance of all of the above approaches to blended learning. Hence, as

mentioned in Chapter 1 the researcher will adopt the definition of blended learning as proposed by Heinze and Proctor (2004) in higher education:

Blended learning is learning that is facilitated by the effective combination of different modes of delivery, models of teaching and styles of learning, and founded on transparent communication amongst all parties involved with the course.

Taking into consideration that the present study is situated in the higher education context and the focus is on the pedagogical and educational aspects, particularly focusing on dimensions of teaching and learning styles (which most definitions have omitted), the researcher, for the purposes of this study, has opted to adopt the definition by Heinze and Proctor (2004).

3.2.1.5.2 Modes of delivery

Advancements in technology have made new modes of delivery possible (Chetro-Szivovs 2010: 5). The primary modes of delivery are face-to-face and online. Dettori and Giannetti (2006:57) state that a variety in the delivery mode aims to foster flexibility of behaviour and may also encourage reflection when a decision needs to be made on the most suitable format to be used.

3.2.1.5.2.1 Face-to-face

Traditional or face-to-face instruction includes lectures, presentations, seminars, projects, tutoring and coaching or mentoring. Individual work may be based on books, manuals, workbooks, magazines, CDs, DVDs, etc. (Georgouli, Skalkidis and Guerreiro 2008: 229). The researcher has also included dialogue and discussion as part of the face-to-face mode, where group work, debates and interactive class discussions occur in a classroom based situation, with or without the use of technology.

Technologies that are commonly used in face-to-face learning situations include PowerPoint, interactive whiteboards (IWB) and audience response systems. PowerPoint presentations can be used to present supplementary materials, for example, images, screen-shots and limited text. Interactive whiteboard is a touch-sensitive whiteboard that is normally mounted on a wall. This allows students and educators to participate interactively in sessions. It consists of a computer, a data projector and a touch-sensitive screen or whiteboard. The computer can be controlled from the whiteboard by pointing at icons with one's finger or with the use of a

special electronic “pen” (Allan 2007: 16). Interactive whiteboard as a teaching tool has the potential to enhance demonstration and modeling; improve the quality of interactions and educator assessments through the promotion of effective questioning; relook at the resources and planning for teaching and lastly increase the pace and depth of learning (Becta 2004: 2).

For LIS education and training interactive whiteboards may be used to demonstrate searching techniques, for example, for a library catalogue, databases or the Internet; encourage reading and enhance literacy skills (Allan 2007: 16). Audience response systems are where students use a hand-held set to answer multiple choice questions or vote on an issue. Lecture rooms need to be fitted with the appropriate technology (Allan 2007: 17). Polling is another method of getting audience response. Most people can only retain about twenty minutes of content in their short term memory before they have to reflect on it in order to move into their long-term memory or it will be lost. Polling provides an ideal way to keep the attention of the class and provide a reflective activity to move information into long-term memory. This can be done without lecture venues being fitted with appropriate technology. Free websites allow educators to set up polls that students take by submitting their answers via text message or on the Web. Polls can be used to engage students in the material and keep their interest. The results appear in real time so students can see changes as they come in. Another good use of polls is to gather information about a subject before it is covered. Forcing students to take a position not only creates reflection, but also a commitment to results. Another option is to ask students for their opinions and use the results as a way of initiating discussion on the issue. Widespread misconceptions can also be demonstrated by asking a simple factual question that most people will get wrong. Polls can be used after content is presented as a means of reflection on a particular topic. These can be asked as simple factual questions that demonstrate whether the student understood the material or as higher level questions that will help them retain the material (Orlando 2011: 11).

3.2.1.5.2.2 Online

Online methods are delivered either online using a learning management system, via the Web, or via CD ROMs or other Web-based Computer Based Technology (CBT) approaches (Georgouli, Skalkidis and Guerreiro 2008: 229). Online communication and the delivery of instructional content can be delivered asynchronously or synchronously. Asynchronous interaction between educators and students occur intermittently with a time delay. The educator and student communicate indirectly, for instance the educator may ask the student to

read a chapter or article online and post comments or questions on the online discussion forum on the LMS or email comments and questions to the educator and the educator replies later providing additional instructional content, clarifications, examples, etc. Synchronous interaction occurs in real time. It is an online learning event in which all participants are logged on at the same time and communicate directly with each other. Contents can be delivered using audio or video conferencing, Internet using instant messaging, virtual classrooms, and live broadcasts of lectures to students in a virtual classroom (Association for Quality and Participation [USA] 2003: 33; Singh and Reed 2001: 3)

In terms of online learning, technology enables the students not to be restricted to the transmission mode of pedagogy which is often the dominant practice in higher education classrooms. Students are able to find more information by themselves and join communities and discussions where facts, information and knowledge are challenged and tested. Students are able to engage in dynamic, interactive and reflective online environments, with rapid feedback and multiple interfaces (Jones 2007: 3). Other advantages of online learning cited in the literature include less time in the classroom, less money on travel, more course availability and decreased student inhibitions as the result of the removal of psychological and social barriers to interaction and increased flexibility. The disadvantages include the lack of student-to-instructor and student-to-student interaction. Other disadvantages include privacy issues, technological difficulties, and a focus on technology rather than the content (Jackson and Helms 2008: 7).

3.2.1.5.3 Educational benefits of blended learning

Pang (2008: 4) considers education as a process, a methodology of communication, sharing knowledge, transferring information, mentorship, facilitating, leading, listening, learning, growing and developing, challenging and, finally, that it is also fluid and difficult to “label and capture”. This statement shows the magnitude and the importance of education and the benefits that it can bring to society when implemented with careful thought and planning. It is therefore particularly important to explore effective teaching and learning interventions.

It has become a global trend in higher education to be searching for more effective teaching and learning in an increasingly diverse and technological environment (Nel and Wilkinson 2006: 553). Garrison and Vaughan (2008: 3) encourage educators in higher education to re-examine current practices and to actively engage students in achieving higher-order learning outcomes needed in higher education.

According to Garrison and Kanuka (2004: 99) blended learning is inherently about rethinking and redesigning the teaching and learning relationship. The facilitation of critical thinking and creative and complex thinking skills need to be fostered in higher education institutions, especially in view of the current the information age. Blended learning offers the possibilities to create transformative environments that can effectively facilitate the acquisition of these skills. Blended learning lends itself to both independent and group activities. Web-based conference systems and the support for audio and video Web provide an integrated environment for delivering course content and participant interaction.

Blended learning supports the benefits of e-learning including cost reductions, time efficiency and location convenience for the students, as well as the essential one-on-one personal understanding and motivation that face-to-face presents. Another benefits of e-learning is that the content of the course is available to the student for a longer period of time compared to the classroom environment; it allows education for seven days a week and twenty four hours a day (24/7); it reaches a number of students and ensures a learning environment which is independent of time and place (Akkoyunlu and Soylu 2008: 183-184).

The benefits of blended learning (as briefly mentioned in Chapter 1) for higher education institutions include:

- Facilitation of easier communication and interaction (Rohleder et al. 2008: 101);
- Motivation and metacognition (Klein, Noe and Wang 2006: 674, 679);
- Enhanced course delivery with improvement in cognitive and reflective skills (Pratt 2003: 4);
- Improved retention and identification of ‘at risk’ students (Hughes 2007: 350-351); improved pedagogy; increased access and flexibility and increased cost effectiveness (Graham 2004);
- Blended learning was found to be a preferred over the traditional lecture format with students reporting a higher level of class satisfaction (Melton, Bland and Chopak-Foss 2009);
- The blended learning approach may offer value in terms of learning and gaining an appreciation of concepts in the field of study as various resources are available to the students. Students exposed to blended learning interventions showed improvement in their analytical skills. Furthermore, students indicated that they would take other

courses if offered using blended learning which could maintain or increase enrollments (Chen and Jones 2007: 12-13); and

- The blended learning environment can result in marked improvements in pass rates and positive student evaluations (Boyle et al. 2003:176).

Combining technology based delivery systems with classroom delivery offers opportunities to integrate motivational support strategies in novel ways (Keller 2008: 182). Keller (2008: 176) uses concepts (attention, relevance, confidence and satisfaction) with the acronym ARCS, to categorize the principles of motivation. It is important to integrate motivational practices in blended learning interventions, as technology based environments can be prone to glitches and some learning tasks may contain challenges where students encounter difficulty in interpreting ambiguously described tasks. One needs to guard against these practices in blended learning interventions by ensuring that tasks are clearly defined. Klein, Noe and Wang (2006: 693) found, however, that learners in the blended learning environment were more motivated to learn; engaged in more metacognition and achieved higher course grades than learners in the classroom condition. The technology used in blended learning facilitated more control over when and where learning took place and provided learners with a variety of tools to facilitate learning.

Re-inforcement is another reason why blended learning is used. Many educators in higher education use technology to supplement their live in-class lectures and activities, thereby building on the foundational skills that are presented in class (Pang 2008: 3). Instructional material presented in the face-to-face classroom environment can be downloaded onto the online classroom and students can consult the instructional material repeatedly to re-inforce in-class lectures.

Blended learning provides increased learner control, self-directedness, and requires learners to take more responsibility for their learning. This could be a solution in a higher education context where there are increases in class sizes, self-directed learning allows students to take more responsibility for their learning. Blended learning also provides face-to-face social interaction where some of the instruction is conducted in a dedicated learning environment (Klein, Noe and Wang 2006: 669).

The online environment fosters collaborative activities and assignments. Peer commenting on work is also made possible. The ease with which students can submit assignments electronically and take self tests and examinations online has led to many institutions

exploiting the technology to globalize their courses. Online assessments can also be supported by computer conferencing (Mason 1998: 2).

The potential of disseminating educational instructional content via innovative means of teaching and learning such as podcasting, using online classrooms, blogs on the Internet, mobile devices such as mobile phones, iPods, mp3 players and PDA devices, needs to be explored for more effective teaching and learning at higher educational institutions. In the LIS discipline there has been an increase in the use of e-content and in the impact of communications and social networking features in the form of Web 2.0 and Library 2.0 (Bawden et. al. 2007). Therefore it is imperative that educators in LIS education and training embrace Web 2.0 tools in their teaching and learning.

3.2.1.5.4 Blended learning and pedagogy in higher education

Pedagogical traditions in higher educational institutions, presently, exist where teaching and learning is facilitated primarily via face-to-face dialogue and discussion in higher education classrooms. Reinhart (2008: 14) makes reference to this as the “Oxbridge model” as mentioned in Section 1.1 in Chapter 1. Educators and students are therefore accustomed to direct oral communication where there is a focus on transmissive rather than interactive pedagogical strategies. Some educators are reluctant or unwilling to adapt to a different teaching style based on technology (Georgouli, Skalkidis and Guerreiro 2008: 227). To be able to adapt to the present technological society, educators need to be trained to develop their pedagogical autonomy, to become proficient in the use of technical tools in order to experiment with new and sound pedagogy that can be implemented in higher education teaching. Sommaruga and De Angelis (2007: 682) purport that direct oral communication “is sensitive and open to direct challenges and dialogues, including body language”. They also believe that the literacy level that is required is higher for online or e-learning than in traditional education.

3.2.1.5.4.1 Pedagogical benefits of blended learning

Blended learning allows the ability to mix different learning activities and allows educators the ability to be more efficient and effective in delivering learning content (Singh 2003). Students also need to be motivated to co-operate in order to reach learning goals through their participation in designed activities. Therefore blended learning should mix didactical methods with delivery formats where the pedagogical strategies should be maximized when

technology is integrated with classroom based activities. In the blended learning environment students have the opportunity to supplement their instruction through access to self-paced review of course materials posted on a learning management system. Students are also able to reinforce their classroom learning with access to audio, video, or other media-driven learning tools. The instructional pedagogy needs to also facilitate learning through a variety of modalities, including both technology based as well as non-technology based. This will allow for a systemic exposure to various learning activities which require customization as a component of the pedagogy driving the instructional design (Pang 2008: 5). This indicates that educators that design blended learning interventions should be acutely aware that pedagogy should be the driving force in blended learning instructional design. The use of blended learning also offers educators increased flexibility in that they may work from home in some cases thereby freeing up commuting time for research and other educational pursuits (Chen and Jones 2007: 13).

Other general reasons for using blended learning, emanating from the literature include that blended learning combines “the best of both worlds” Graham (2004). Graham (2004) also found that one of the most commonly cited reasons for using blended learning is more “effective pedagogical practices”. Furthermore, Khan’s Octagonal Framework (2003) also addresses pedagogy as one of the dimensions that refers to issues regarding teaching and learning with the emphasis that any teaching strategy should be based on sound pedagogical principles (Nel and Wilkinson 2008: 169). The pedagogical dimension is concerned with the combination of content that has to be delivered (content analysis), the students’ needs (audience analysis), and learning objectives (goal analysis). The pedagogical dimension also comprises the design and strategy aspect of e-learning (Singh 2003: 53). The pedagogical dimension in Khan’s Octagonal Framework (2003), addresses a scenario where all learning goals in a given programme are listed and the most appropriate delivery method is chosen. The guidelines in Khan’s Octagonal Framework (2003) would assist and sensitize the creators of blended learning interventions to align the learning goals with the mode of delivery. Pang (2008: 6) emphasizes that when using technology in a blended learning environment, one needs to identify the constructs of the pedagogy that would inform the design of the instruction and also create a meaningful learning environment. If the components of face-to-face and online environments are not well blended, there can be an impact on the student’s cognitive load that will have an impact on the effectiveness of the student’s learning experience. Educators need to develop understanding of instructional

design in order to adequately use pedagogy to drive instructional design. Educators also need to be realistic about student abilities and preferences and be flexible in the use of various pedagogical models that facilitate meaningful learning in a blended environment (Pang 2008: 7).

Educators when considering blended learning interventions need to be able to find the appropriate blend by matching the identified learning objectives or outcomes and content with the best delivery methods. Such methods include face-to-face, offline individual work and online communication (Georgouli, Skalkidis and Guerreiro 2008: 227).

This study has taken into consideration, when developing the framework for blended learning, pedagogical issues in the design of course structure in order to lay the foundation for developing LIS course content. Careful consideration needs to be taken in analysing what needs to be taught, identification of skills to be reinforced and the right content needs to be established for both teaching and learning to become more interactive and beneficial.

Blended learning design, development and delivery should therefore focus on pedagogical principles. For the purpose of this study the researcher has ensured that pedagogical principles are included in the development of a framework for blended learning in the delivery of LIS curricula at South African universities that will guide LIS educators in developing pedagogically sound blended learning interventions.

3.2.1.5.5 Blended learning and Communities of Practice (CoPs)

The term ‘communities of practice’ was first coined by Etienne Wenger and Jean Lave in their 1991 book entitled *Situated learning* (Cambridge University Press) (Wenger 1997: 38). Communities of Practice can be seen as an integral part of daily lives. A community is made from its practice, where practice refers to activities in a historical and social context that gives structure and meaning to what people do. Both explicit and tacit knowledge of the people in the communities are included in their practice. Communities of Practice differ from other types of communities in that they involve “a domain and a practice as well as a community” (Wenger 1997: 38).

Communities of Practice (CoPs) can be seen as groups of peoples who share goals and engage each other in planning, application and reflection which can be used as powerful tools for professional development as the expertise and experience of many people can be shared. Online communications provide an important channel for information workers to communicate with colleagues and to network across the profession and with other professions. Information professionals also use virtual communication tools to exchange ideas and information, work together on common themes or issues and work collaboratively in teams (Allan 2007: 18).

Yukawa (2010: 54) states that using blended learning in a classroom community of practice supports “active engagement and collaborative learning” and also exposes LIS students with skills in librarianship, information technology and information design that is needed by blended librarians. ‘Blended librarian’ is a term coined by John Shank (Associate Instructional Design Librarian at the Pennsylvania State University) and Steven Bell (Associate University Librarian for Research and Instructional Services at Temple University). The ‘blended librarian’ integrates “traditional librarianship, instructional design theory, and practice with modern information technology skills” to improve their teaching and learning of information literacy initiatives. These skills are used to design online or face-to-face information literacy programmes, library services, communicating with educators and instructional designers, as well as transforming the librarians’ roles at higher education institutions with information literacy awareness and education (Bell and Shank 2004: 374; Huey 2009: 199). Bell and Shank co-manage the Web portal to the *Blended Librarians Learning Online Community* (<http://www.blendedlibrarian.org> and <http://home.learningtimes.net/library>). This platform provides applications for chats, discussion forums, resources sharing, ideas and Webcasting, and allows users opportunities for professional writing and discussion of practice and theory, professional development and collaboration (Huey 2009: 200). Yukawa (2010: 72) reiterates that the core competencies of LIS professionals are being debated, as they are required to have higher level synthesis of theoretical understanding and professional relevance within LIS education. LIS educators, institutional instructional designers (facilitators of blended learning) could form Communities of Practice to share knowledge and practices of the educators with the educational designers’ ability to apply technologies appropriately in the teaching and learning process and contribute towards developing blended learning intervention for LIS education and training.

3.2.1.5.6 Blended learning and communication

In all instructional contexts, both hybrid and distance education, there is an expectation that learning involves human interaction (Johnson 2006: 46). The two main types of online communication processes are asynchronous and synchronous. Johnson (2008: 166) purports that both synchronous and asynchronous forms of online discussion have perceived advantages and that there is evidence that both contribute to student cognitive and affective outcomes.

Asynchronous tools enable people to communicate at a time that suits them. Asynchronous communications take place over time rather than at the same time; it occurs in delayed time and does not require simultaneous participation. Examples include e-mail, discussion boards, weblogs. A survey by Branon and Essex (2001: 36) reported asynchronous online discussion as being useful for “encouraging in-depth, more thoughtful discussion; communicating with temporally diverse students, holding ongoing discussions where archiving is required and allowing all students to respond to a topic”. The same study showed educators citing the limitations of asynchronous communication as: “lack of immediate feedback; students not checking in often enough, length of time necessary for discussion to mature and students feeling a sense of social disconnection”. Synchronous tools enable people to communicate when they log on to the same system at the same time, that is, they are live and require simultaneous participation. Branon and Essex (2001: 36) report synchronous communications as useful for “holding virtual office hours, team decision making, brainstorming, community building and dealing with technical issues”. The identified limitations associated with synchronous, from the same study include; “getting students online at the same time, difficulty in moderating larger-scale conversations, lack of reflection time for students and intimidation of poor typists”. Examples of synchronous tools that enable people to communicate include chat and conference rooms, telephony or phone calls supported by the Internet, that is, Skype and videoconferencing (Allan 2007: 18).

The availability of virtual communication tools like e-mail, discussion lists, bulletin boards, online chat and conferencing and videoconferencing has revolutionized teaching and learning and has led to the development of e-learning (Allan 2007: 19). Second generation virtual communication tools, also referred to as Web 2.0 or social networking software are being used regularly by millions of people (Darwish and Lakhtana 2011: 204). Social networking is concerned with individuals making connections with others using Internet-based tools such as

wikis, weblogs and personal sites such as Twitter, MySpace, Facebook and Flickr. Some of these tools are being integrated into blended learning programmes. Other virtual communication tools include web feeds of newsfeeds, that is, Really Simple Syndication (RSS) feed. This allows information from a variety of Internet sources, including news services, information services, podcasts and weblogs to be sent to an individual's website or e-mail account. This helps to access up-to-date information as it is posted on the Internet. Podcasts are a useful tool in a blended learning programme as they may be used as a means of recording guest speakers, lectures, interviews or offering an alternate method of disseminating information through mini-presentations. A podcast is a stand-alone audio or video file with an RSS feed. They are relatively easy to set up as all that is needed is a microphone, computer and appropriate software. Podcasts can be published and made available on a website, weblog or learning environment such as Moodle or Blackboard (Allan 2007: 33). Finally, mobile learning or m-learning where mobile technologies such as mobile phones, laptops with integrated wireless cards, personal digital assistants (PDAs) and tablet PCs are being increasingly used by educators, students and end-users. The availability of technologies such as bluetooth devices, digital cameras and MP3 music players such as the iPod is also being used to support teaching and learning (Allan 2007: 43). These learning tools are fundamental in blended learning programmes.

3.2.1.5.7 Issues and challenges with blended learning

Some of the issues and challenges with blended learning include different levels of students with regard to computer literacy and learning; the role of live interaction; the role of learner choice and self-regulation; technical support and training; finding the balance between innovation and production and implementation; dealing with the digital divide. Other challenges highlighted by Rohleder et al. (2008: 102) include system technical difficulties such as power cuts where technical problems arise with e-learning software being damaged; online communication can be disjointed due to finding common time for chat rooms and online group discussions; unequal access to computers with middle class students having access to computers and Internet at home while some students can only use the computers at university.

The Net generation can be defined as the population of young people who have grown up or are growing up in constant contact with digital media (Beyers 2009: 220). Technology

pervades almost every sphere of life from home to work to play and also has profound implications for teaching and learning. Net generation students learn in different ways compared to the traditional student and the challenge for educators to meet the needs of the Net generation students is often daunting. Educators themselves have been trained to operate on a two dimensional level, where they may rely on a syllabus bound prescribed text book. Many educators grew up and were trained without computers and other ICTs (Beyers 2009: 220). Therefore educators need to be brought up to speed to cater for the Net generation. Presently some higher education institutions are running short courses training educators in the use of current technology such as using online learning management systems and iPods, to improve their teaching. The use of blended learning intervention can address these challenges.

Modern ICT intensive organizations expect their employees to have digital skills and graduates tend to be underprepared for the demand of the current workplace that demands competencies such as creative thinking, group problem solving and decision making (Beyers 2009: 223). This also holds true for the LIS sector where LIS graduates are required to possess these skills. Their use of blended learning within the LIS curricula can help LIS graduates to acquire these skills.

Time and working in the confines of the classroom with traditional classes and restrictive timetables is another challenge that students and educators are faced with. The learning process needs to be extended beyond the confines of the core curriculum and the physical walls of the classroom (Beyers 2009: 223). The use of carefully planned blended learning interventions can minimize some of these personal limitations.

The above challenges are very relevant to the South African higher education scenario. Therefore serious cognizance needs to be taken of the challenges faced by educators and students at South African higher education institutions when designing and implementing blended learning interventions.

3.3 LIS education and training

Gorman (2004: 377) states that education lies in the realm of the LIS schools and training is the duty of the employing institutions. According to Audunson (2007: 97) Library and Information Science (LIS) as an academic field ‘resembles a complex patchwork’. LIS is an

interdisciplinary science incorporating various disciplines such as humanities, law, applied science, social science and engineering (WordNet 3.0).

Due to the multidisciplinary nature of the LIS field, LIS programmes have different institutional affiliations where some are affiliated with faculties or departments of humanities, others with faculties or units of the social sciences and also others with schools of computer science (Audunson 2007: 95).

3.3.1 Trends in LIS education

The aim of education for any profession is to prepare the followers of that profession for its successful practice by providing a good background to the theory and practice of the profession (Devarajan 1995: 10). However in the twenty-first century educational systems need to prepare students for life in an increasingly information and technology-rich society. Competing in a rapidly changing information and knowledge-based economy requires skills different from the more traditional educational process. Creative problem solving, innovative thinking, information processing and assessment are some of the skills that are deemed necessary for the global economy (Majid et al. 2002: 1). Tenopir (2000: 43) states that LIS education should provide a broader knowledge base that will allow graduates to adapt and function in a rapidly changing information environment. Raju (2006: 1) supports this view by projecting LIS as a rapidly evolving discipline which is dominated by digital technology. In this context the debate on the value of general education in LIS education and training is revisited, where a blend of both general and vocational education should be offered to “allow graduates to meet the challenges and take advantage of the opportunities presented by a dynamic information landscape located within a knowledge based, technology driven and global economy” (Raju 2006: 1).

The library and information sector has faced a variety of challenges associated with changes in the technical, social and economic environment (Bawden 2009). The information landscape has experienced changes particularly as the result of the move towards predominantly digital and networked provision of information. Some of the issues that currently affect the library and information sector include economic down turn worldwide; digital information becoming the norm; the success of Internet-based information systems from search engines to online retailers; the new generation having different expectations of information provision and the movement towards cloud computing (Bawden 2009). Furthermore the growth of information-related occupations and increase in information

consciousness have caused HEIs to offer professional information-related education and training, for example, Information Technology, Business Information management, Knowledge Management, etc. This has resulted in LIS schools no longer having the monopoly over the education and training of information professionals (Raju 2013: 251). LIS schools need to re-examine the population it serves as well as the way it reaches it. The most common changes include enhancing the curriculum, offering qualifications that appeal to a broadly defined information workforce and expanding distance education programmes. Names of LIS schools or qualifications have been altered to reflect these changes to indicate service to a wider range of information professions (Onyancha and Minishi-Majanja 2009: 129; Owen and Leonhardt 2009: 551; Tenopir 2000: 43).

Taking into consideration all these changes, LIS education needs to re-examine teaching and learning in LIS education in order to adapt to the new environment. Changes in the information environment also reflect changes in the LIS curricula.

3.3.2 LIS curricula

LIS has changed since the advent of the computer and the Internet. The pace of change in the LIS curriculum has increased with the increased demands of advances in technologies available for the delivery of information and instruction (Bawden 2009; Owen and Leonhardt 2009: 551). Worldwide, most LIS schools have made curricular changes in recent years, ranging from a total revamping of the curriculum to minor changes. The KALIPER report (Educating Library and Information Science professionals for the new century: the KALIPER report: 2000) indicates that the Internet and related technologies are the driving forces behind regular curricular changes. The report identifies six trends shaping LIS curricula changes:

- In addition to libraries as institutions and library-specific operations, LIS curricula are addressing broad-based information environments and information problems;
- While LIS curricula continue to incorporate perspectives from other disciplines, a distinct core has taken shape that is predominantly user-centred;
- LIS schools and programmes are increasing the investment and infusion of information technology into the curricula;
- LIS schools and programmes are experimenting with the structure of specialization within the curriculum;

- LIS schools are offering instruction in different formats to provide students with more flexibility; and
- LIS schools and programmes are expanding their curricula by offering related degrees at the undergraduate, master's and doctoral levels.

The changes in the LIS curricula include courses that focus on people as well as those that focus on technology. The people centric courses include: information seeking behavior, ethics, information-needs analysis, user education, library services to special populations and knowledge management. Courses that focus on technology and its use include: digital libraries, visualization of information structures, telecommunications, Internet applications, networking technologies, electronic publishing, information security and metadata (Tenopir 2000: 44). Gorman (2004: 377), however, believes that advances in ICTs have led LIS educators to focus on the technology and dismiss aspects of libraries that are not “amenable to a technological solution”. Gorman (2004: 378) reiterates that what is taught in the curriculum needs to be aligned to what is needed in the libraries. Raju (2013: 254) reiterates that there is a “recurrent tension between theory and practice”. The core curriculum should therefore include: collection development and acquisitions, cataloguing, reference and library instruction, circulation, maintenance, preservation, systems (focusing on installing, modifying, maintaining and creating computer systems and maintaining a Web presence), management and types of libraries (Raju 2013: 254). Auduson, Nordlie and Spangen (2003: 198) describe redesigning of the curriculum aimed at producing a “complete librarian” showing that the core subject fields that practising librarians need to master include:

- Knowledge organization and retrieval;
- Promotion of culture and knowledge;
- Knowledge and literature;
- Organization and management of libraries; and
- Information technology.

It is important for this study to take a brief look at the changes and the trends that are shaping the LIS curriculum in South African universities.

3.3.3 LIS education and training at South African higher education institutions

LIS education in South Africa is part of a triangular relationship that involves the LIS teaching departments, universities, the library and the information services profession (Raju 2013: 250). LIS education in South Africa, as with global trends, has involved redesigning of curricula to keep current with advances in information and communications technologies. New programmes have been created to include new competencies required in the LIS sector as well as to attract more students to the LIS field of study, where the main focus is to produce LIS professionals who can function effectively in a digital information environment (Bawden, Vilar and Zabukovec 2005: 97). Other common trends in LIS education and training in South Africa include change of names in LIS departments and programmes to reflect current information trends, adoption of ICTs, mergers and closure of LIS schools (Onyanha and Minishi-Majanja 2009: 129; Raju 2013: 252), the latter being part of the country's restructuring of the higher education landscape.

In South Africa there are two dominant models for LIS qualifications, namely, the undergraduate model and the postgraduate mode. The undergraduate model is the most common model used in South Africa, consisting of three to four years of study, which consists of subjects from the LIS field that are combined with compulsory and/or elective courses from other disciplines. Articulation towards further qualifications can be followed by an honours degree (specializing in topics on library and information science). In the postgraduate model, students with any general degree are admitted to the postgraduate diploma in Library and Information Science. The postgraduate diploma can be followed by a masters degree and then a doctoral qualification (Ochollo and Bothma 2007: 152).

There are currently ten public higher education and training institutions in South Africa that offer education and training in LIS. According to the Department of Arts and Culture (2010: 100) these include:

- Durban University of Technology;
- University of Cape Town;
- University of Fort Hare;
- University of KwaZulu-Natal;

- University of Limpopo;
- University of Pretoria;
- University of South Africa;
- University of Western Cape;
- University of Zululand; and
- Walter Sisulu University.

Higher education and training institutions in South Africa offer both professional and paraprofessional LIS education and training which according to Raju (2005: 74) is a departure from international trends in LIS education. Raju (2005: 76) further states that although technological imperatives have led to curricular revisions in LIS education and training, this has been carried out with varying degrees of success, by different LIS schools.

Curriculum development at universities in South Africa has traditionally been discipline-based with departments having a high level of autonomy in designing and promoting new programmes and qualifications (Raju 2006: 8). The Higher Education Act (Act 101 of 1997), promulgated in the new democratic era, stipulated the principle that a single co-ordinated qualifications framework should be developed for all higher education qualifications in line with the National Qualifications Framework (NQF). The new system therefore called for a shift from the disciplinary approach to a programme based approach (Republic of South Africa 1997: 17). This also leads to the renewal of the curriculum at the programme level, which would impact on teaching, learning and the delivery of the various programmes offered at higher education institutions. This study aims to contribute to the renewal of LIS curricula at the programme level by exploring the educational aspects in the use of blended learning with the aim of developing a framework for effective and meaningful blended learning in the delivery of LIS curricula. This study also explores the benefits of using more transformative and interactive teaching and meaningful learning practices in LIS education, and in this way hopes to contribute to the literature on LIS education in South Africa.

3.4 Summary

This chapter reviewed literature on trends in teaching and learning in the twenty-first century. Literature on various teaching methods suitable for higher education and focusing on the

nature and scope of blended learning, were covered. It was also important to examine literature reflecting trends in LIS education and training globally and in the South African context. The next chapter will focus on the methodology that was employed in this study.

Chapter 4: Research Design and Methods

4.1 Introduction

Research can be seen as a way of thinking critically and examining the various aspects of one's profession; understanding and formulating guiding principles that govern a particular procedure; and developing and testing new theories for the enhancement of the profession (Leedy and Ormrod 2010: 8). Welman, Kruger and Mitchell (2005: 2) affirm that research is also about questioning and empirical examination using methods and tools to scientifically obtain knowledge through objective procedures to find answers, with a view to instituting appropriate changes for a more effective professional service. Hence, Leedy and Ormrod (2005: 2) define the term research as a "systematic process of collecting, analyzing and interpreting information for well-defined problems in order to obtain a greater understanding of a phenomenon".

A research design is a plan or structure for research that links the philosophical foundations and the methodological assumptions of the research approach to detailed research methods to enable the researcher to provide credible, accountable and legitimate answers to the research questions (Durrheim 1999: 54; Gelo, Braakmann and Benetka 2008: 272). Research designs entail procedures for collecting, analyzing, interpreting and reporting data for research studies (Cresswell and Plano Clark 2007: 58). It is imperative that the researcher is rigorous about the research design as it guides the researcher on deciding on appropriate research methods that are suitable for the study. It also determines the logic with which the researcher makes decisions for the study. These decisions include the philosophical foundations, the procedures or strategies of inquiry and finally the methods of data collection, analysis and interpretation.

Research methodology is the overall approach to research linked to the paradigm or theoretical framework while research method refers to the systematic strategy to investigate research questions through data collection, data analysis or sampling procedure (Cibangu 2010: 178; Mackenzie and Knipe 2006: 5). To further clarify, research methodology can be seen as a set of rules, principles and formal conditions that ground and guide scientific inquiry in order to organize and increase our knowledge about a particular phenomenon. The research methods specify the practical implementation of the scientific inquiry in terms of the data collection, analysis and interpretation (Gelo, Braakmann and Benetka 2008: 270).

This chapter examines the philosophical foundations, the research methodology and the specific research methods that were employed in the present study.

4.2 Philosophical foundations

Guba (1990: 17) refers to philosophical foundations as “worldviews which means, set of beliefs that guide action”. Worldviews imply how one views and thinks about research and how it is conducted (Cresswell 2009: 5-6). Similarly, scientific paradigms are a whole system of thinking that contains a basic set of beliefs or assumptions that guide research inquiries. Kuhn (1970) as cited by Neuman (2011: 65) introduced the term ‘paradigm’ which means a basic orientation to theory and research. Therefore, since these philosophical foundations influence the research inquiry, the research needs a foundation for its inquiry which is provided by worldviews and scientific paradigms. Paradigms are foundational to methodologies or methods used in research since a paradigm represents a philosophy or metaphysical system of beliefs, worldviews, or values used to justify and propound research priorities and choices (Cibangu 2010: 177; Cresswell 1998; 74; Guba 1990: 17; Lincoln 2009: 153).

The research paradigm influences the undertaking of the study with reference to the framing and understanding of the social phenomena. The basic set of beliefs or assumptions that guide the researcher’s inquiries are related to the ontology which refers to the nature of reality, the epistemology which relates to the development of knowledge and to the relationship of the researcher to that which is being researched (Terre Blanche and Durrheim 2006: 6). In addition to these two main philosophies, axiology is concerned with the role of values in the study and the methodology refers to the process of the research (Wahyuni 2012: 69). These basic beliefs as they relate to the research paradigms are elaborated on in the discussions on research paradigms.

The choice of paradigm determines the intent, motivation and expectations for the research and sets down the basis for subsequent choices with regard to methodology, methods or research design (Mackenzie and Knipe 2006: 2). A number of theoretical paradigms are discussed in the literature such as positivism and postpositivism, critical paradigm, interpretivism and pragmatism (Mackenzie and Knipe 2006: 2). The most common orientations, that is, positivism and postpositivism, and critical paradigms will be briefly discussed to highlight the researcher’s paradigm choice. Thereafter the discussion will focus on the interpretative paradigm and pragmatism and their appropriateness for this study.

4.2.1 Positivism and postpositivism

Positivism centres on finding the objective truth and proving it through empirical means. The objective truth is revealed using scientific methods where the focus is on measuring the relationships between variables systematically and statistically (Henning 2004: 17). Exponents of positivism profess that the scientific method provides for the acquisition of knowledge through observation and experiment, irrespective of the context and related concepts such as feelings, opinions, values or culture (Cibangu 2010: 177). The researcher remains independent of the data and maintains an objective stance (Wahyuni 2012: 70).

Positivism was replaced after World War Two by postpositivism which challenged the conceptual and methodological underpinnings of positivism especially with regards to the absolute truth about knowledge (Guba 1990: 20; Cresswell 2003: 7). The nature of knowledge is “nonfalsified hypotheses that are probable facts of laws where reality does exist but can be known imperfectly because of the researcher’s human limitations” (Guba and Lincoln 1994: 114). The postpositivist paradigm can therefore be seen as taking a comprehensive, more subjective look at occurrences and attempts to comprehend these by way of descriptive investigations. Positivist and postpositivist research are most commonly aligned with quantitative methods (discussed in Section 4.3) of data collection and analysis (Mackenzie and Knipe 2006: 3).

4.2.2 Critical paradigm

Guba and Lincoln (1994: 109) interpret critical theory as a blanket term that includes neo-Marxism, feminism, materialism and participatory inquiry. According to Henning (2004: 23) the critical paradigm, also referred to as a critical framework or critical theory, aims at

promoting critical consciousness and breaking down the institutional structures and arrangements that reproduce oppressive ideologies and the social inequalities that are produced, maintained and reproduced by these social structures and ideologies.

Critical researchers are aware that, although individuals have the ability to transform their social and economic circumstances, there are social, cultural and political domination constraints. In the critical paradigm, the focus of the relationship between theory and practice is on lived experiences and the social relations that structure the experiences (Henning 2004: 23). Social reality is historically constituted with questions of power, control and epistemology as social constructions with benefit to some and not to others. The development

of knowledge is not seen as discovered by objective inquiry but rather by critical discourse and debate.

4.2.3 Interpretivism

Interpretivism seeks to understand the mechanisms by which individuals work together within a system (Oliver 2010: 45). Interpretive research does not predefine dependent and independent variables but focuses on how people make meaning in their lives as situations emerge (Henning 2004: 18). Interpretivist researchers prefer to interact and to have dialogue with the research participants in order to understand the social world from their experiences and subjective meaning that people attach to it (Wahyuni 2012: 71).

Interpretivism adopts relativist ontology that is socially constructed and there are multiple interpretations of constructs that can be made in an inquiry. The basic tenet of the interpretive paradigm is that reality is socially constructed (Mertens 1998: 11). The interpretive researcher relies on participants' views of the situation being studied and recognizes that their own background and experiences has an impact on the research (Creswell 2009: 8; Mackenzie and Knipe 2006: 3). According to Lincoln, Lynham and Guba (2011: 98) users of the interpretive paradigm are orientated to the production of reconstructed understanding of the social world and therefore value transactional knowledge. Interpretivists maintain that knowledge is constructed not only by observable phenomena but also by descriptions of people's intentions, beliefs, values and self understanding (Henning 2004: 20).

In terms of axiology, the premise is that research is "value-bound". The researcher is a part of what is being researched and cannot be separated and will therefore be subjective (Henning 2004: 20). The interpretivist researcher takes the stance of the insider perspective to study the social reality from the perspective of the people themselves. Therefore the experiences and values of both the research participants and the researcher influence the collection of data and its analysis (Wahyuni 2012: 71). The interpretive researcher encourages varieties of data and different sources and analyses methods in order to strive for validity. The validity of the data is also increased when respondents are given more opportunity to reflect their true feelings and opinions in interviews and focus group discussions (Oliver 2010: 73).

Interpretivism adopts the hermeneutic or dialectic methodology in order to produce as informed and sophisticated a construction as possible. Hermeneutics can be defined as a specific system or method of interpretation and involves cultivating the ability to understand

things from somebody else's perspective (Oliver 2010: 95; Neuman 2000: 7). The present study adopts the hermeneutic methodology examining the perspectives of the LIS educators, facilitators of blended learning and LIS students.

4.2.4 Pragmatism

Pragmatism is a world view that arises out of actions, situations and consequences. Pragmatism does not commit to any one system of philosophy or reality. The focus of pragmatism is the emphasis on the research problem and the use of approaches to understand the research problem. The pragmatist concentrates on the *what* and *how* of the research problem (Creswell 2009: 10-11). Pragmatism rejects the either-or choice between paradigms and searches for practical answers to the research questions with emphasis on what works best to understand and approach the research problem. The pragmatist begins with the research question and emphasizes that the research philosophy should be viewed as a continuum, with many points between the quantitative, qualitative and mixed methods continuum (Teddlie and Tashakkori 2009: 73). Pragmatism provides an opportunity for “multiple methods, different worldviews and different assumptions as well as different forms of data collection and analysis” (Creswell 2013: 11).

Pragmatism subscribes to the view that objective and subjective perspectives are not mutually exclusive (Wahyuni 2012: 71). The pragmatist position is that it is acceptable to mix qualitative and quantitative methods in research studies that call for different types of data in order to answer the research questions (Teddlie and Tashakkori 2009: 86-87). Therefore, pragmatism accepts a mixture of ontology, epistemology, axiology and methodology to approach and understand social phenomena (Wahyuni 2012: 71).

4.2.5 Paradigm choice

Positivist and interpretive paradigms are essentially concerned with understanding phenomena but through two different epistemological lenses. While positivism strives for objectivity, the interpretive paradigm strives for understanding and interpretation of the world in terms of its participants (Cohen, Manion and Morrison 2007: 27). As stated in Section 4.2.2, social reality in the critical paradigm is historically constituted with questions of power, control and epistemology as social constructions with benefit to some and not to others. The scope of this study does not address the issues of power, control and social constructions with respect to the inequalities in the provision of education; therefore, the

critical paradigm was not preferred for this study. Pragmatism on the other hand opens the door to different worldviews or paradigms. Creswell (2014: 11) states that “pragmatism opens the door to multiple methods, different worldviews, different assumptions, as well as different forms of data collection and analysis. The choice of pragmatism and interpretivism as epistemological lenses for this study was based on the objective of the study, the research questions, and the research context. At this point it is important to re-state the study’s objective and critical questions generated to address this objective:

Objective of the study

The broad objective of the study is to explore the educational and pedagogical issues in blended learning for the development of a framework for designing and implementing blended learning in the delivery of LIS curricula in South African universities.

Critical questions generated to meet this objective:

- What are the educational benefits of blended learning for LIS programmes in South Africa?
- What learning theories are used in the educational design and facilitation of blended learning interventions?
- What are the pedagogical benefits of blended learning for LIS programmes in South Africa?
- What teaching methods are used in the design and facilitation of blended learning interventions?
- To what extent do LIS programmes in South Africa currently use dialogue and discussion/face-to-face type delivery in LIS education?
- To what extent do LIS programmes in South Africa currently use online learning experiences?
- Do LIS programmes in South Africa currently make use of blended learning? If yes, what blended learning interventions are used?
- What are the theoretical and practical aspects that may be used in designing effective blended learning interventions for the delivery of LIS curricula?
- What effective blended learning framework may be developed for the meaningful delivery of LIS curricula in South African universities?

These research questions are mainly concerned with exploring the educational and pedagogical issues in blended learning. The critical questions generated from the objectives lead to multiple explanations and this does not favour a positivist epistemological position, which assumes that there should be one objective generalizable explanation of truth. Furthermore, the many research questions that were generated from the objective could not be fully explored by one paradigm alone. Instead pragmatism and interpretivism were chosen as the more appropriate options since the research questions generated for this study aim to explore the multiple realities of blended learning. Furthermore pragmatism and interpretivism both extend to the research context which assumes multiple realities. This study analyses the educational and pedagogical issues in blended learning constructed by LIS educators, LIS students and facilitators of blended learning in higher education institutions in South Africa. The researcher aimed at working directly with the experience and understanding of LIS educators, facilitators of blended learning and LIS students in developing a framework for designing and implementing blended learning in the delivery of LIS curricula in South African universities.

Interpretivism as an epistemological lens, was embraced in the study as the researcher and the object of the research are inextricably linked. Within the interpretive understanding, the object of the research is understood within the consciousness of the researcher. Interpretivism was also chosen as the researcher aimed at exploring and understanding the social phenomenon of blended learning in higher education and training from the experiences and subjective meanings that the participants attached to blended learning. Choosing pragmatism exclusively as a research paradigm of choice would not address the researcher's intent to interpret and understand meanings of the participants about blended learning in order to inductively develop a framework for blended learning. Furthermore, the researcher is currently a LIS educator herself and therefore takes the stance of the insider perspective where the experiences and values of both the research participants and the researcher substantially influence the collection of data and its analysis (discussed further in Sections 4.5 and 4.7).

Exposure to the literature surrounding paradigmatic issues has shown the researcher that consideration and discussion of pragmatism offers a central position philosophically and methodologically; a practical and outcome orientated method of inquiry as well as a method for selecting a mix of methods that can help the researcher better respond to the many critical questions generated from the objective of the study (Johnson and Onwuegbuzie 2004: 17).

The paradigm and the research questions also determine the research approaches that are most appropriate for the study.

4.3 General research approach

According to Creswell (2014: 247) research approaches are plans and procedures for research that include decisions from broad assumptions to detailed methods of data collection, data analysis and interpretation. It can be seen as the intersection of philosophical assumptions, research designs and specific methods. Quantitative, qualitative and mixed methods research approaches are discussed below.

4.3.1 Quantitative and qualitative research approaches

Quantitative and qualitative research approaches are often used in the literature in two discourses: one relating to the research paradigm that refers to the distinctions about the nature of knowledge, how one understands the world and the ultimate purpose of the research and the other referring to research methods, how data are collected and analysed and the types of generalizations and representations derived from the data (Gelo, Braakmann and Benetka 2008: 268; Mackenzie and Knipe 2006: 6). Allwood (2012: 1421) makes the distinction between quantitative and qualitative in three ways; firstly, to focus on one part of the research process that is then called quantitative or qualitative; secondly to describe specific research methods as either qualitative or quantitative, and lastly to distinguish between a quantitative and a qualitative research philosophy. O’Leary (2004: 99) defines quantitative and qualitative as “adjectives for types of data and corresponding modes of analysis”, where quantitative data is represented through numbers and analysed using statistics and qualitative data is represented through words, pictures or icons and analysed using thematic exploration.

The different research paradigms underlying quantitative and qualitative approaches are reflected in different conceptions about the nature of reality and knowledge. Quantitative research aims to explain the causes of changes in social facts primarily through objective analysis of data that is treated in magnitude. The researcher focuses on established procedures rather than individual judgment. Qualitative research, on the other hand, assumes that reality is socially constructed through collective or individual definitions of the environment or situation (Gelo, Braakmann and Benetka 2008: 268). Therefore, the aim of qualitative research is to capture the understanding of the social phenomenon as the participants

experience it and where the researcher is part of the phenomenon of interest. The researcher is able to use the inductive approach in an attempt to make sense of the situation without preempting the phenomena under study (Cresswell 1994; Denzin and Lincoln 2011: 3-4; Gorman and Clayton 2000: 23; Mertens 1998: 160).

Quantitative and qualitative approaches also present different methodologies. Quantitative approaches generally use nomothetic methodology that is concerned with identifying laws that are predictable and general. Qualitative approaches, on the other hand, adopts an idiographic methodology that “consists of the representation of an individual event of singular, temporally limited reality as completely as possible with the objective of recording and comprehending it in factuality” and has a tendency to individualize (Gelo, Braakmann and Benetka 2008: 271; Teddlie and Tashakkori 2009: 42). Gelo, Braakmann and Benetka (2008: 271) state that there can be a close “interplay” between both nomothetic and idiographic approaches and therefore both can be considered as the “extremes of continuum” where a single research inquiry can present either nomothetic or idiographic investigation.

Quantitative and qualitative approaches differ in the research methods that are applied. The intent of sampling in quantitative research is to choose individuals that are representative of the population so that the results can be generalized. Qualitative approaches on the other hand, may make use of purposive sampling strategies (Gelo, Braakmann and Benetka 2008: 275). With regard to data collection, in quantitative research, relevant data needs to be collected to test the formulated hypothesis whereas in qualitative research data has to be collected in order to allow an in-depth understanding of the participants’ perspectives. In quantitative research data analysis proceeds from descriptive to inferential and results of the analysis are presented in the form of statements summarizing the statistical results usually with tables or figures. Qualitative data analysis is carried out through content or thematic analysis. In quantitative research data interpretation consists of deductive inference whereas in qualitative research data interpretation is based on a process of inductive inference (Gelo; Braakmann and Benetka 2008: 277).

According to Gorard (2004: 7) a combination of quantitative and qualitative methods, also known as mixed methods, has been identified as a “key element in the improvement of social science, including education research” where research is strengthened by the use of a variety of methods. Gorard (2004: 7) goes on to argue that mixed method research “requires a greater level of skill, can lead to less waste of potentially useful information and creates researchers

with an increased ability to make criticisms of all types of research”. However, Mertens (1998: 3-4) cautions that a researcher’s philosophical intent or underlying theoretical orientation has implications for all decisions that are made in the research process which includes the choice of research methods. This study employs a combination of both quantitative and qualitative research approaches.

4.3.2 Mixed methods

Creswell and Plano Clark (2007: 6) define mixed methods research (MMR) as both a methodology and a method and it involves collecting, analyzing and mixing qualitative and quantitative approaches in a single study or a series of studies to provide a unified understanding of the research problem. Tashakkori and Cresswell (2007: 4) add to this definition by including the integration of the findings and drawing of inferences using both quantitative and qualitative methods and approaches “in a single study or program of inquiry”. Johnson, Onwuegbuzie and Turner (2007: 123) elaborate on this definition of MMR:

Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g. use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration.

Researchers use mixed methods research when a single approach cannot fully investigate the phenomenon especially when the phenomenon is complex and multifaceted. Mixed methods research therefore allows the researcher to address issues more widely and more completely than a single method and thereby enriches the complexity of the research findings. The use of different methods also allows for flexibility in the research process that may create insights and possibilities that a single method cannot produce. The quality of the research can be improved when biases, limitations and weaknesses of a particular method are counterbalanced or compensated for, by mixing with a method belonging to another approach (Fidel 2008: 266-267). The current study investigates the complex and multifaceted phenomenon of blended learning. Quantitative research methods allowed the researcher to establish relationships among variables, but could not explain the reasons for the relationships. The qualitative phase of the study was used to explain the factors underlying the broad relationships with regard to the various aspects of blended learning. Furthermore,

the findings of the exploratory Web survey questionnaire (refer to Sections 5.5.1 – 5.5.1.15) can be triangulated with the findings from the interview and focus group data (refer to Sections 5.5.2 – 5.5.2.8.1 and 5.5.4 – 5.5.4.6). The exploratory survey of LIS educators was driven by the theoretical framework that underpinned this study (refer to Chapter 2), the researcher’s review of the literature in Chapter 3 and her need to ascertain the prevailing state of blended learning in LIS education and training in South Africa, whereas the interviews and focus group discussions focused on the subjects’ (LIS educators, institutional facilitators of blended learning and LIS students) perspectives on the educational and pedagogic aspects pertaining to blended learning.

Greene, Caracelli and Graham (1989: 259), using a purposive sample of 57 mixed method evaluation studies as well key theoretical sources, identified five purposes for using mixed methods research: triangulation, complementarity, development, initiation and expansion:

- Triangulation seeks convergence, corroboration and correspondence of findings through the use of more than one method in order to increase the validity of constructs and results and to eliminate the inherent biases of using one method only.
- Complementarity aims at seeking elaboration, enhancement, illustration and clarification of the results from one method with the results of another method in order to increase the interpretability, meaningfulness and validity of constructs.
- Development employs the results from one method to help develop or inform the other method.
- Initiation seeks contradictions, paradoxes and new perspectives of frameworks to increase the depth and breadth of inquiry results and interpretations by analyzing the results from different perspectives of different methods and paradigms.
- Expansion aims to extend the breadth and range of the inquiry by using different methods for different inquiry components. The scope of the inquiry is increased by selecting the methods that are most appropriate for multiple inquiry components.

There are a plethora of research designs that have been developed for mixed method research which presents a challenge for the researcher in selecting optimal mixed method designs (Leech and Onwuegbuzie 2009: 265). Teddlie and Tashakkori (2006: 25) present a complex Methods-Stands Matrix, which features the various mixed methods research designs. Four families of mixed designs are presented, namely, sequential, concurrent, conversion and fully integrated. The matrix presents many dimensions where sub-types can be easily constructed

and/or modified with the general types used depending on the purpose of the research and the research questions. The key criteria that were used in the Methods-Strands Matrix include:

- The number of methodological approaches used;
- The number of strands in the research design;
- The type of implementation process; and
- The stage of integration where integration happens in more than one stage.

Creswell (2014: 219) identifies three basic mixed methods designs with more advanced mixed methods strategies that can be incorporated within the three basic forms. The three basic designs include:

- *Convergent parallel mixed methods*. The researcher collects both quantitative and qualitative data, analyzes them separately and then compares the results to ascertain whether the findings confirm or disconfirm each other.
- *Explanatory sequential mixed methods*. It involves a two phase project in which the researcher collects quantitative data in the first phase, analyzes the results, and then uses the results to plan the second qualitative phase of the research. The quantitative results inform the participants to be purposefully selected for the qualitative phase of the research and the types of questions to be asked of the participants.
- *Exploratory sequential mixed methods*. The researcher first begins by exploring with qualitative data and analysis and then uses the findings in a second quantitative phase. A three phase procedure is employed, the first phase as exploratory, the second as research instrument development and the third as administering the research instrument to a sample of the population.

According to Creswell (2014: 227-228) there are three advanced methods design that incorporate the elements of the convergent, explanatory sequential and exploratory sequential methods. The *Embedded mixed methods* design nests one or more forms of quantitative, qualitative or both data within a larger design, for example, narrative study. The *Transformative mixed methods* design incorporates elements of the convergent, explanatory sequential or exploratory sequential methods within a social justice framework in studying marginalized groups. Finally, there is the *Multiphase mixed methods* in which several mixed methods projects are conducted by researchers (Creswell 2014: 227-228).

According to Leech and Onwuegbuzie (2009: 267) a mixed methods study can use a partially mixed or fully mixed design. Fully mixed designs represent the highest degree of mixing of research methods as well as research paradigm characteristics. Fully mixed methods design involve the mixing of quantitative and qualitative techniques within one or more stages of the research process or across these stages whereas with partially mixed methods design the quantitative and qualitative phases are not mixed within or across these stages. In partially mixed methods design both the quantitative and qualitative elements are conducted either concurrently or sequentially in their entirety before being mixed at the data interpretation stage. Leech and Onwuegbuzie (2009: 268) present a three dimensional typology of mixed methods design with the following three dimensions: *level of mixing*, whether partially mixed or fully mixed; *time orientation* stating whether the quantitative and qualitative phases occur concurrently or sequentially, and *emphasis on approaches* pertains to whether equal status or dominant status is given to either quantitative or qualitative phases. This “2 (partially mixed or fully mixed) x 2 (concurrent or sequential) x 2 (equal status or dominant status) matrix that is derived by crossing these three dimensions yields eight types of mixed research designs” (Leech and Onwuegbuzie 2009: 268), namely:

- *Partially mixed concurrent equal status design* refers to conducting a study that has two phases that occur concurrently with the quantitative and qualitative phases having approximately equal status.
- *Partially mixed concurrent dominant status design* involves conducting a study with two phases that occur concurrently, where any one of the phases can have greater emphasis.
- *Partially mixed sequential equal status design* deals with a study that involves two phases that occur sequentially, with the qualitative and quantitative phases having equal weight.
- *Partially mixed sequential dominant status design* is where a study has two phases that occur sequentially, with either the quantitative or qualitative phase having the greater emphasis.
- *Fully mixed concurrent equal status design* is whereby a study is conducted mixing qualitative and quantitative research within one or more or across the following four components in a single study: the research objective, type of data operations, type of analysis and type of inference. The quantitative and qualitative phases are mixed

concurrently at one or more stages or across the components. Both elements are given approximately equal weight.

- *Fully mixed concurrent dominant status design* involves conducting a study that mixes quantitative and qualitative research within one or more of, or across the following three components, namely: type of data operations, type of analysis and type of inference, of a single study. The quantitative and qualitative phases are mixed concurrently at one or more stages or across the stages where either the qualitative or quantitative phase is given more weight.
- *Fully mixed sequential equal status* involves conducting a study that mixes qualitative and quantitative research within one or more of, or across the stages of the research process. The quantitative and qualitative phases occur sequentially at one or more stages or across the stages. Both qualitative and quantitative phase are given approximately equal weight.
- *Fully mixed sequential dominant status design* involves conducting a study that mixes qualitative and quantitative research with one or more of, or across the stages of the research process. The quantitative and qualitative phases occur sequentially at one or more stages or across the stages where either the quantitative or qualitative phase is given more weight.

(Leech and Onwuegbuzie 2009: 267-271)

Creswell (2014: 218) suggests that the type of mixed methods design that is used in the study and the rationale for choosing it should be indicated.

4.3.2.1 Mixed methods design choice for the study

Teddlie and Tashakkori (2009: 25) developed a seven step process to enable researchers to select the best design for their studies:

1. The researcher needs to determine if her research questions require a monomethod or mixed method design.
2. The researcher needs to be aware that there are various typologies of mixed methods research designs and should access details regarding them.
3. The researcher wants to select the best mixed methods research design for her study and assumes that one of the published typologies includes the right design for her project.

4. Typologies may be differentiated by the criteria that are used to distinguish among the research designs within them. The researcher needs to know these criteria (discussed below in more detail).
5. The criteria should be listed by the researcher who may then select the criteria that are most appropriate for the particular study.
6. The researcher then applies the selected criteria to potential designs, ultimately selecting the best research design for her study.
7. In some cases the researcher may need to develop a new mixed method design because no single best design exists for her research project.

Teddlie and Tashakkori (2009: 13) also present seven criteria drawing from what other authors have used in creating their mixed methods typologies. These criteria include:

- Number of methodological approaches used;
- Number of strands or phases;
- Type of implementation process;
- Stage of integration of approaches;
- Priority of methodological approach;
- Function of the research study; and
- Theoretical perspective.

The researcher applied all these criteria in selecting the best design for her research. The current study involved a two-phase project in which the researcher collected quantitative and qualitative data using open-ended and closed questions in a online Web questionnaire (discussed in Section 4.4.4.1.2) for the first phase. The results were analysed, and then used to plan the second qualitative phase of the research. The quantitative results informed the researcher about which participants to purposefully select for the qualitative phase of the research. The data analysis from the Web-based exploratory survey as well as the literature review pointed to the types of qualitative questions to ask of participants in the semi-structured face-to-face interviews with LIS educators, semi-structured telephone interviews of facilitators of blended learning as well as focus group discussions with LIS students, in the second qualitative phase of this research. Data from the various data sources (the literature, Web survey with LIS educators, semi-structured face-to-face interviews with LIS educators, semi-structured telephone interviews to facilitators of blended learning as well as focus group discussions with LIS students) were integrated during the data analysis and interpretation

stage. Priority was given to the second qualitative stage of the research as the researcher's aim was to work directly with the experiences and understandings of the LIS educators, facilitators of blended learning and the LIS students in developing a framework for designing and implementing blended learning in the delivery of LIS curricula in South African universities. Finally, the philosophical foundation of the study was based on the research objective of the study, the research questions and the research context which guided the researcher to choose pragmatism and interpretivism as the epistemological lenses for this study (discussed in Section 4.2).

The mixed method research design used in this study could be classified as a “fully mixed sequential dominant status design” (Leech and Onwuegbuzie 2009: 267-271). This design involves mixing “quantitative and qualitative research within one or more of, or across the stages of the research process” (Leech and Onwuegbuzie 2009: 267-271). In this study the quantitative and qualitative phases occurred concurrently in the first exploratory phase using the Web survey (incorporating both open-ended and closed questions) and then sequentially with face-to-face interviews with LIS educators, semi-structured telephone interviews with facilitators of blended learning and focus group discussions with LIS students exposed to blended learning interventions. The quantitative and qualitative approaches were mixed within the research objective; data collection (Web survey), data analysis and data interpretation stages, with the qualitative stage given more weight by the use of interviews (LIS educators and facilitators of blended learning) and focus group discussions with LIS students.

Collins, Onwuegbuzie and Sutton (2006: 69) conceptualized mixed research as involving the following thirteen interactive and recurring steps that are grouped within three stages: *Formulation stage*: (a) determining the mixed goal of the study; (b) formulating a mixed research objective(s); (c) determining the rationale of the study and the rationale(s) for mixing quantitative and qualitative approaches; (d) determining the research purpose(s); (e) determining the mixed research question(s); *Planning stage*: (f) selecting the mixed sample design; (g) selecting the mixed research design; and the *Implementation stage*: (h) collecting quantitative and/or qualitative data; (i) analyzing the quantitative and/or qualitative data using quantitative and/or qualitative analysis techniques; (j) validating/legitimizing the mixed research findings; (k) interpreting the data; (l) writing the mixed research report; and (m) reformulating the mixed research question(s).

For the current study the *Formulation stage* (see a-e above) is covered in Chapter One. The *Planning stage* (see f-g above) and the *Implementation stage* (see h-m above) are covered in Chapter Four and Chapter Six.

4.4 The research context

The research context establishes the territory for the research (Durrheim 2006: 34). This section includes the research setting, population and sampling.

4.4.1 Research setting

The study involved the ten public higher education and training institutions in South Africa that offer education and training in Library and Information Science (LIS) – nine traditional universities and one university of technology. According to the Department of Arts and Culture (2010: 100), LIS education and training in South Africa is offered by the following higher education institutions:

- Durban University of Technology;
- University of Cape Town;
- University of Fort Hare;
- University of KwaZulu-Natal;
- University of Limpopo;
- University of Pretoria;
- University of South Africa;
- University of the Western Cape;
- University of Zululand and
- Walter Sisulu University.

4.4.2 Population

Welman, Kruger and Mitchell (2005: 52) define the term population as the “study object and consists of individuals, groups, organizations, human products and events or the conditions to which they are exposed”. The population includes the total collection of all units of analysis which the researcher wishes to include as elements of the study to be able to make specific conclusions (Schofield 2006: 52). The researcher is able to survey all the cases in a specific population when the number of relevant cases is small. Surveying all cases in a population is called undertaking a census where a census can be defined as “a count of all the elements in a

population and/or a determination of their characteristics based upon information obtained on each of their elements” (Mouton 1996: 135; Schofield 2006: 52).

Surveys are conducted to gather information about a selected population. Sometimes the survey is conducted as a census where the goal is to survey every unit of the population (Fricker 2008: 195). The target population for the first phase of the research design in this study, the exploratory Web-based survey, included all LIS educators (a census) from the originally identified ten public higher education and training institutions in South Africa that offer education and training in LIS.

The Department of Arts and Culture (2010: 100) indicated that the ten public higher education and training institutions employed 62 academic staff members. Before the commencement of the Web survey, 55 academic staff members consented to participate in the exploratory online survey. Despite numerous attempts at contacting the Department of Library and Information Science at the Walter Sisulu University, there was no response. Enquiries revealed that there were no full-time LIS academics present in the department and that restructuring at the Walter Sisulu University that resulted in LIS at this university being reduced to a school library programme servicing the Education Faculty. Walter Sisulu University was therefore excluded from the study resulting in the survey of nine LIS departments/programmes.

The participants of the first phase of the study included 55 academic staff members from nine public higher education and training institutions in South Africa that offer education and training in LIS. The exploratory Web survey (discussed in more detail in Section 4.4.4.1) was administered via e-mail and submitted by the respondents from the 3rd of July 2010 until the 13th of September 2010.

Analysis of the exploratory online Web survey (discussed in more detail in 4.4.4.1) indicated that six of these nine institutions had been using blended learning interventions in their delivery of LIS education. These included the:

- University of Fort Hare;
- University of Limpopo;
- University of Pretoria;
- University of South Africa;
- University of the Western Cape and

- University of Zululand.

Semi-structured interviews were conducted with 15 LIS educators from these institutions who indicated via the Web survey that they used blended learning in their course delivery. Semi-structured telephone interviews were conducted with ten facilitators of blended learning from these institutions, also ascertained via the analysis of the Web survey. Six focus group discussions (discussed in more detail in Section 4.4.4.2.3) were conducted with students, from each of the above institutions, who were exposed to blended learning interventions.

The data from the exploratory Web survey as well as the literature reviewed for this study guided the process of sampling for the interviews in the study and the design of the instruments used for data collection in the interviews and focus group discussions.

4.4.3 Sampling

Sampling is an important step in the research process because it helps to inform the quality of inferences made by the researcher from the findings. Sampling strategies can be complex for studies in which quantitative and qualitative research approaches are combined concurrently or sequentially (Onwugbuzie and Collins 2007: 281). Selecting the sampling design and mixed research design represents the research planning stage of the mixed research process (mentioned in Section 4.3.2.1). The sampling size, the sampling scheme and the sample characteristics need to be made explicit by the researcher (Onwugbuzie and Collins 2007: 307). In quantitative research sampling is intended to choose units of analysis that are representative of the population so that the results can be generalized to it. This is known as external validity. This can be achieved by using probability sampling, where each member of the population has the same probability of being included in the sample (Gelo, Braakmann and Benetka 2008: 274). Some of the most adopted strategies of probability sampling are simple random sampling, systematic random sampling, stratified random sampling and cluster sampling (Gelo, Braakmann and Benetka 2008: 275).

Qualitative approaches usually make use of non-probability sampling which is sometimes also called purposive sampling strategies (Schofield 2006: 30). In non-probability sampling the researcher cannot guarantee or forecast that each element of the population is represented in the sample. Common forms of non-probability samplings include; convenience sampling; quota sampling and purposive sampling (Leedy and Ormrod 2010: 211). Purposive sampling in qualitative research involves the researcher intentionally selecting participants that have

experienced the central phenomenon that is being explored in the study (Creswell and Plano Clark 2007: 415). This allows the researcher to select “information-rich cases to be studied in-depth” (Patton 1990: 169). Purposive sampling strategies include, among others: convenience sampling whereby elements are drawn from a subpopulation according to its accessibility and research interests; homogeneous cases sampling that consists of picking elements from a subgroup to study in-depth; snowball sampling whereby the researcher uses informants to identify cases that will be useful to include in the study (Gelo, Braakman and Benetka 2008: 275). This study used purposive sampling for the qualitative phase of the research where the participants were extracted purposively from the results of the Web survey (discussed in Section 4.4.2)

The population for the first phase of the study, that is, the exploratory Web survey was 62 LIS educators (Department of Arts and Culture 2010: 100). Leedy and Ormrod (2010: 213) indicate that the entire population should be surveyed for smaller populations ($N = 100$ or fewer). Since the population for the first phase of the study was not large, a census was conducted with 55 LIS educators who consented to participate in the study. Of the 62 LIS educators indicated in the Department of Arts and Culture (2010: 100) report, seven LIS educators were not available to participate in the survey due to resignation from the position, retirement and sabbatical leave, resulting in a population of 55 LIS educators. Therefore, no sampling was required for this phase of the study. The advantage of using a census was that it alleviated sampling error (Schofield 2006: 30).

Onwuegbuzie and Collins (2007: 293) developed the two-dimensional mixed methods sampling model providing a typology of mixed methods sampling designs and providing an in-depth and comprehensive discussion of sampling in mixed methods research. They present 24 sampling schemes that are associated with quantitative and/or qualitative research. They also provide sample size guidelines from the extant literature for each of the major qualitative and quantitative research designs. Detailed discussion of this is beyond the scope of this study. However, the researcher used the model to identify the sampling design for the study.

The participants for the semi-structured interviews with LIS educators who have been using blended learning were selected from the responses from the Web survey using purposive sampling choosing only those educators who, in their responses to Item 10 in the Web survey (refer to Appendix A), indicated that they have been using blended learning in their course delivery. All 15 LIS educators who indicated that they have been using blended learning were

chosen for the face-to-face interviews. They represented a sequential and nested sample. A nested relationship implies that the sample participants selected from one phase of the study represent a subset of those chosen for the other facets of the investigation (Onwuegbuzie and Collins 2007: 292).

The participants for the semi-structured telephone interviews with facilitators of blended learning were drawn from the six educational institutions that developed blended learning interventions for LIS education (see Section 4.4.2). This was ascertained from the data gathered from the exploratory Web survey using cross tabulation of the LIS educators who indicated that they have been using blended learning, with the institutions to which they were affiliated.

LIS student participants for the focus group discussions were selected from the classes of students who were exposed to blended learning interventions in the six identified institutions. The students were selected from different levels of study, thus involving multi-level sampling. A multi-level relationship involves the use of two or more sets of samples that are extracted from different levels of the study, that is, from different populations (Onwuegbuzie and Collins 2007: 292). Thus the overall mixed sampling design involved a combination of concurrent, identical, sequential, nested and multi-level sampling comprising of 55 LIS educators in the exploratory Web survey, purposive sampling of 15 LIS educators for the semi-structured face-to-face interviews, 10 facilitators of blended learning for telephone interviews and six focus group discussions with LIS students, with one focus group from each of the six higher education institutions identified as using blended learning in LIS education.

4.4.4 Instruments used in data collection

Several instruments and recording processes were used in the data collection process. Data collection was conducted using a Web-based survey (Appendix A), semi-structured face-to-face interviews (Appendix B), semi-structured telephone interviews (Appendix D) and focus group discussions (Appendix G).

4.4.4.1 Exploratory Web survey

Teddlie and Tashakkori (2009: 345) define survey research as a “research design in which self-report data are collected via questionnaires or interviews (or both) with the goal of predicting the behaviors or attributes of the general population” with the main consideration

for choosing this research design being the transferability of external validity and generalizability to the population. According to Babbie (2008: 270) and Creswell (2014:157) surveys may be used for descriptive, explanatory and exploratory purposes and can also be a vehicle for measuring attitudes and orientations in a large population. This study used the survey for exploratory purposes to ascertain the nature of current practices with regard to blended learning in the delivery of LIS curricula at South African universities.

4.4.4.1.1 Internet and e-mail as a research tool

Survey instruments that were previously distributed via post, for example, snail mail, can now also be distributed by electronic mail (e-mail). The traditional mail survey required that the respondents have basic literacy; the e-mail survey further requires computer literacy. E-mail surveys exist in several forms: link pointing to a Web survey; e-mail with attached questionnaire; e-mail texts without attachments or links (Rasmussen 2008: 88). The current study used e-mail survey with a link pointing to a Web survey. E-mail surveys are suited for populations with universal e-mail and Internet access. The population for the exploratory survey in this study (LIS educators) had access to e-mail and the Internet.

The advantage of using Internet and e-mail surveys is the quicker turnaround compared to postal distribution or face-to-face surveys thus raising the data quality by securing timely data. Internet surveys also have a lower cost and are therefore more economical to use (Creswell 2014: 157). Conducting surveys has become much easier with the Internet and consequent availability of supportive software for Web surveys (Rasmussen 2008: 89). The Internet also offers an array of opportunities for collecting survey data. A variety of presentation styles, question and response formats and multimedia stimuli can be accommodated using online instruments. A variety of hardware, software and connection equipment are used by respondents to access the Internet. This can alter the appearance and functioning of the instrument. Therefore, researchers should ensure that instruments are presented and delivered in a similar yet usable format to each respondent (Rasmussen 2008: 94). The online delivery of the exploratory Web survey was pretested (discussed in 4.4.5) to ensure that the instrument was delivered in similar and usable format to each respondent.

The survey questionnaire to LIS educators (refer to Appendix A) was developed for this study using LimeSurvey software. The LimeSurvey software (an open-source, free software application) was used for the exploratory Web survey and could be accessed using any Web browser. LimeSurvey was chosen for the following features: it offers an unlimited number of

questions as well as an unlimited number of participants to a survey; it offers a user management feature where the researcher could track how many surveys were sent, the date sent and completed; it also has a printable survey version; the survey can be anonymous and not-anonymous, which proved useful for the researcher, as after the analysis the researcher was able to identify the participants for the face-to-face interviews; it is able to send invitations, reminders using tokens (tracks who has completed the survey and ensures that each person can only participate once) via e-mail; it also allows the participants to stop and continue the survey at a later time; it has a template editor for creating your own page layout; it has a user friendly administration interface which was very useful to keep track of the administration; it has the survey expiry date feature and it has export and import functions to text, PDF, SPSS and MS Excel format (LimeSurvey documentation 2010).

4.4.4.1.2 Online Web questionnaire

Online (Internet) surveys are becoming an essential research tool. Survey data collection that is based on standardized questionnaires delivered to a sample or the whole of the target population is an important data collection tool in a variety of contemporary research fields (Vehovar and Manfreda 2008: 177). Studies have indicated that an online approach to conducting surveys is an effective and efficient means of gathering data. Studies have suggested that the rate of responses of Web surveys is on par with those completed on paper (Carini et al. 2003: 11).

Computer technology enables significant improvements with Internet surveys over traditional 'paper-and-pencil' modes of administering surveys. Responses collected from the respondents are immediately stored in a computer database and ready for further processing. This reduces time, costs and errors arising from the transcription of paper questionnaires. Computerized questionnaires using the graphical interface of the World Wide Web (WWW) offer advanced designing features such as question skips and filters, randomization of answers, control of answer validity and inclusion of multimedia elements. Self-administration is beneficial for both the researcher and the respondents. Respondents are able to complete a questionnaire at the time, place and pace of their own preference and with an increased sense of privacy. An increased sense of privacy and absence of interviewer-related biases can importantly contribute to higher data quality (Vehovar and Manfreda 2008: 178-179; Neuman 2011: 339). The online Web survey was the preferred mode of questionnaire delivery for this study since LIS educators involved in the exploratory phase of the research

project have access to computers and the Internet. To improve the response rate, friendly reminders were quite easily sent via e-mail to the participants after the deadline for responding to the questionnaire had passed. The responses were stored in a secure database. Tracking of the number of questionnaires completed was possible by using the ‘tokens’, another feature that was useful to the researcher. The user interface was easy to use with the use of radio buttons. Radio buttons are a series of on-screen buttons that are open circles in front of a set of options, one of which may be selected. Question skips and filters when the response was negative also proved to be useful features for the Web survey. Online delivery of the questionnaires also minimized printing and travelling costs to administer the questionnaire. This was done with a click of a button.

Dillman, Tortora and Bowker (1998: 2) identify principles for the construction of respondent-friendly Web questionnaires. Respondent-friendly refers to designs that reduce the occurrence of sample survey errors through improvement of the motivational aspects of responding as well as the technical user-interface between the respondent and computer. Dillman, Tortora and Bowker’s (1998: 7-13) principles for designing web questionnaires include:

- The Web survey should be introduced with a welcome screen that is motivational, emphasizes the ease of responding and instructs respondents on the action needed for proceeding to the next page;
- The Web survey should begin with a question that is fully visible on the first screen of the questionnaire and can be easily comprehended and answered by all respondents;
- Each question should be presented in a conventional format similar to that normally used on paper questionnaires;
- The line length should be limited to decrease the likelihood of a long line of prose being allowed to extend across the screen of the respondent’s browser;
- Specific instructions should be provided on how to take each necessary computer action for responding to the questionnaire;
- Computer operation instructions should be provided at the point of each question where action is to be taken; not only in a separate section prior to the beginning of the questionnaire;
- Respondents should not be forced to provide an answer to **each** question before being allowed to answer subsequent ones;

- Web surveys should be constructed so that respondents can scroll from question to question unless the order of the questions are a major concern;
- Ensure that the number of answer choices for a particular question are displayed on the same screen and if this is not possible then ensure that appropriate navigational instructions are added when the number of answer choices exceeds the number that can be displayed on one screen;
- Graphical symbols or words that convey a sense of where the respondent is in the completion progress should be used; and
- The use of question structures that have known measurement problems on paper questionnaires, for example, check-all-that-apply or open-ended questions should be used cautiously, “check-all-that-apply” list should not be too long and for open-ended questions follow-up probes can be used.

All of the above principles were taken into consideration and, wherever possible, were incorporated in the design of the exploratory Web survey used in this study (see Appendix A).

Sekaran and Bougie (2010: 198) focus on three areas for questionnaire design. The first relates to how the questions are worded. The second refers to the planning of issues with regard to how the variables will be categorized, scaled and coded when the responses are received. The third focuses on the general appearance of the questionnaire, that is, how the entire questionnaire is organized. The principles of wording refer to factors such as: the appropriateness of the content and purpose of the questions; the language of the questionnaire should approximate the level of understanding of the respondents; the type and form of questions refer to whether the question is open-ended or closed. Double-barreled questions, ambiguous questions, leading questions, and loaded questions should be avoided (Babbie and Mouton 2001: 234; Cohen, Manion and Morrison 2007: 334; Neuman 2011: 316). Simple short questions are preferable to long ones. Clarity of wording and simplicity of design are essential (Cohen, Manion and Morrison 2007: 338). The sequencing of the questions should be such that the respondents are led from questions of a general nature to more specific questions and from questions that are relatively easy to answer to those that are progressively more challenging (Sekaran and Bougie 2010: 203). A good introduction, well organized instructions and neat alignment of the questions, that would motivate the respondents to answer the questionnaire, are also important (Sekaran and Bougie 2010: 205). The design of

the Web survey instrument in this study went through several drafts to ensure that the wording was appropriate and that the questions/items were aligned to the research objective and the critical questions that were generated to address this objective. Double-barreled questions, ambiguous questions, leading questions, and loaded questions were avoided. An introduction was included in the questionnaire. The sequencing of questions was from the general to the specific.

The questionnaire designed for this study consisted of both closed and open-ended questions. The survey questionnaire was a controlled survey meaning that only individuals with a valid token code (not already used) could access the survey. This also ensures that the survey is answered only once by the intended recipient of the e-mail. Each participant is assigned a token code. The token code keeps track of who has completed the survey and ensures that each person can only participate once. The survey questionnaire was delivered using e-mail addresses of LIS educators from the nine LIS higher education institutions in South Africa that offered LIS education and training. The token management tool was used to control the survey. The token feature allowed the researcher to:

- Manually create invitations using the e-mail addresses of the LIS educators;
- Send e-mails in batches;
- Generate a unique token number for each participant;
- Send a reminder e-mail to each person on the list who had not responded; and
- Restrict access to people who did not have a token and to those with a token who had already responded.

4.4.4.1.3 Structure of the Web survey questionnaire

According to Welman, Kruger and Mitchell (2005: 152) survey questionnaires may be used to obtain biographical details, typical behavior, opinions, beliefs about a particular topic or issue and attitudes. The structure of the web survey questionnaire to LIS educators comprised ten sections (refer to Appendix A):

Section A This section requested background information of the higher education institution and the biographical details of the LIS educators;

Section B Information requested related to teaching methods used by the LIS educators;

- Section C Respondents were required to provide information on the educational support by their respective institutions with regard to teaching and learning;
- Section D This section focused on the development of teaching and learning content in LIS education and training using both face-to-face and online delivery;
- Section E Respondents were requested to provide information on the facilities and equipment available for teaching and learning at their respective institutions;
- Section F The focus of this section was on learning styles and learning theories;
- Section G Information on the extent to which technology assisted teaching and learning was used in their respective institutions was provided in this section;
- Section H The extent and nature of collaborative teaching and learning interventions within institutions as well as with other institutions was investigated in this section;
- Section I Modes of assessments used as well as feedback of assessments were explored in this section; and
- Section J Respondents were required to provide information on blended learning frameworks or models that were currently being used at their respective institutions.

Respondents were required to respond to a mix of both closed and open-ended questions/items. Respondents clicked on radio buttons for the closed and ‘multiple choice’ type questions. Spaces were available for LIS educators to answer open-ended type questions. The respondents submitted the completed questionnaires by clicking on the ‘Submit’ button.

4.4.4.2 Interviews

The interview is an alternate method for survey data collection. Interviewers ask participants questions orally and record the participants’ responses (Babbie 2008: 291). An interview involves direct personal contact with the participant who is required to respond to questions relating to a particular research problem (Bless, Higson-Smith and Kagee 2006: 116). The use of the interview method enables the researcher to reach areas of reality that would otherwise remain inaccessible such as people’s subjective experiences and attitudes (Perakyla and Ruusuvoori 2011: 529). Interviewing also allows for free interaction between the

researcher and participant and allows opportunities for clarification and discussion. Another advantage of interviewing is that it provides access to participants' ideas, thoughts and memories in their own words. The researcher can also verify emerging themes and interpretations and can therefore incorporate new questions as needed (Mertens 1998: 110).

Interviews may be unstructured, semi-structured or structured. This study used semi-structured interviews to ascertain participants' personal experiences with regard to the phenomenon of blended learning. Semi-structured interviews were appropriate for this study as emerging themes could be identified; findings from the exploratory Web survey could be verified and new questions could be incorporated as needed. Interviews can be conducted face-to-face, by telephone or online (Sekaran and Bougie 2010: 186). The interviews for this study were semi-structured so the researcher was able clarify aspects that were not clear from the participants' responses. The researcher was also able to verify emerging themes that were ascertained from the findings from the exploratory Web survey. This study used semi-structured face-to-face interviews with LIS educators and semi-structured telephone interviews with facilitators of blended learning.

Some sources of bias in interview data could occur when the participants are interviewed while they are extremely busy or not in good humour. The introductory sentence, the personality of the interviewer, inflection of voice, could introduce bias. Awareness of the sources of bias enables the researcher to obtain relatively valid information (Sekaran and Bougie 2010: 194). To minimize bias in responses, the interviewer needs to establish rapport with the respondents and ensure that unbiased questions are asked. The researcher was very mindful of these biases when conducting interviews and always attempted to maintain good rapport with the participants. Both face-to-face interviews as well as telephone interviews have their strengths and weaknesses and have their uses in different circumstances (Sekaran and Bougie 2010: 196). Face-to-face interviews and telephone interviews enabled the researcher to ensure that the participants understood the questions and the researcher could clarify participants' responses. The researcher, being an academic herself could also establish rapport and motivate participants to answer questions in a non-threatening environment. All LIS educators were interviewed in their offices at their respective institutions. The researcher was also able to read non-verbal cues in the face-to-face interviews with LIS educators, especially when they showed confusion or uncertainty; the researcher could then give clarity. Rich data could be obtained with the use of probes in the interviews.

4.4.4.2.1 Face-to-face interviews

In face-to-face interviews the researcher or interviewer asks the participants questions orally and records the participants' responses. The survey interview is a social interaction that requires specific norms, expectations and social roles (Babbie and Mouton 2001: 249). Face-to-face interviews have the highest response rates and permit the longest and most complex questions. The face-to-face option allows the interviewer to observe the surroundings and to use nonverbal communication and verbal aids. Extensive probes can also be used by interviewers. The high cost of face-to-face interviews for travel, supervision and personnel costs can be the biggest disadvantage of face-to-face interviews. Interviewer bias is also greatest for face-to-face interviews. The participants may be affected by the interviewer's appearance, tone of voice, and wording of questions (Neuman 2011: 339). The researcher ensured that she was professionally attired for the interviews and always attempted to communicate with the participants in a tone of voice that projected the questions clearly to the participants. The role of the interviewer entails more than interviewing participants and recording their responses; much of the interviewer's time is spent on contacting and locating participants (Babbie and Mouton 2001: 251). In the current study, the researcher also found that this can be a very time consuming exercise.

The main advantage of face-to-face interviews is that the researcher can adapt the questions as necessary, clarify doubts and ensure that the responses are properly understood by rephrasing and repeating the questions. The researcher is also able to pick up on non-verbal cues from the participant. Any discomfort, stress or problem that the participant experiences, can be detected through nervous tapping, frowns and other body language unconsciously exhibited. Participants may also feel uneasy about the lack of anonymity of their responses when they interact face-to-face with the interviewer (Sekaran and Bougie 2010: 193).

In the current study the researcher decided to conduct semi-structured face-to-face interviews with LIS educators firstly because the researcher wanted to interact directly with educators about their experiences and understandings in order to obtain the subjective meanings that they attached to the phenomenon of blended learning. The interviews were conducted from the premise that the participants relate to their own experiences and are empowered to express their views through dialogue. The researcher was able to achieve this by adapting the questions when it was necessary to clarify doubts on the part the participant with regard to the questions asked by the researcher and from the researcher perspective to ensure that the

responses were correctly understood by the researcher and doubts clarified. This was done by sometimes rephrasing and repeating the questions. The non-verbal cues also alerted the researcher if there was any confusion or discomfort with regard to the line of questioning. In some instances participants avoided answering the question directly and veered the discussion off the topic of the question asked. In these instances, the researcher tried to gently steer the participant back towards answering the question but when this failed the researcher did not pursue the line of question in respect of the participants' right to choose not to answer the question.

Before each interview, each educator was notified of his/her right to participate voluntarily without any physical or psychological coercion and that the educator had the right to withdraw from the study at any time. The confidentiality of the educators' responses was assured. The participants were also informed that all data would be secured or concealed and made public only with anonymity. Each participant was also informed that they would have the opportunity to review a transcribed copy of the interview before its analysis if he/she so desired. Each LIS educator interviewed signed a consent form (refer to Appendix C).

4.4.4.2 Telephone interviews

Telephonic interviews occur when the interviewer asks questions from the interview schedule over the telephone and records the respondent's responses. Telephonic interviews are less suited to complicated questions as the participants do not have the questions in front of them. Telephone interviews are shorter than face-to-face interviews with ten to fifteen minutes being the norm (Welman, Kruger and Mitchell 2005: 164). Semi-structured interviews were used for the ease of application over a vast geographical area. It also allowed for greater anonymity than the face-to-face interviews. The telephone interview is a flexible method with most of the strengths of face-to-face interviews but at a much lower cost. Furthermore a number of people can be reached across the country or internationally in a relatively short period of time. Interviewers can control the sequence of questions and can use some probes (Neuman 2011: 337). Participants may not have any discomfort that they may feel in facing the interviewer. It is also possible that participants may feel less comfortable disclosing personal information over the phone than face-to-face. The main disadvantage is that the participant may terminate the interview without any warning or explanation by hanging up the phone. Sekaran and Bougie (2010: 194) advise to call the participant ahead of time to request participation, giving an approximate idea of how long the interview will last and

setting up a mutually convenient time. Participants tend to appreciate the courtesy and are more likely to cooperate.

For this study each participant chosen for the semi-structured telephone interview was contacted personally by telephone and/or e-mail correspondence prior to data collection to introduce the researcher and negotiate the interview date and time that was most convenient for the participant. Another disadvantage of the telephone interview is that the researcher is unable to read the participant's non-verbal communication cues (Sekaran and Bougie 2010: 194). During the semi-structured telephone interviews for this study, the researcher paid attention to the participant's tone of voice and periods of silence to ascertain whether the participant was uncomfortable answering a particular question. In these instances the researcher did not pursue that line of questioning and sometimes rephrased the question or went on to the next question.

4.4.4.2.3 Focus group discussion

The terms 'group interview', 'focus group interview' and 'focus group discussion' are used interchangeably in the literature (Barbour 2007: 2). This study uses the term 'focus group discussion'. This qualitative methodology offers an opportunity to obtain an overall view of the opinions, values and feeling about the research problem (McCabe 2011: 251). Focus group discussions can be described as in-depth group interviews. Group dynamics need to be taken into account when conducting focus group discussions. Some participants may dominate the discussion while others may be reluctant to express their views due to shyness or they may feel uncertain about their perspectives. The researcher should ensure that everyone in the group has a chance to answer each question; therefore the list of questions for a focus group interview should be kept short (Leedy and Ormrod 2005: 146). Barbour (2007: 2) stresses that the researcher needs to actively encourage group interaction and ensure that participants engage amongst themselves, rather than interact with the researcher. The researcher was very aware of the group dynamics and attempted to elicit responses from everyone within the group. The researcher facilitated the focus group discussions in a manner that encouraged group discussions by allowing other participants to respond to comments from fellow participants instead of the researcher doing so and by probing whether they agreed to a particular comment or not and to elaborate where necessary. The researcher also ensured that everyone in the group had a chance to contribute to the discussion.

One of the reasons for using a focus group discussion is its capacity to facilitate comparison and afford insights that would not be provided by other methods. Another reason for using this method is triangulation, where a combination of methods produces parallel data that is used to illuminate differences in focus or emphasis (Barbour 2007: 41). Focus group discussions contribute to a different form of data collection through a group setting. In focus group discussions there is a reliance on the interaction of the group. The data therefore emerges from the interaction of the group and not only between the participant and the interviewer (Cohen, Manion and Morrison 2007: 376). Focus group discussions were used in this study as part of a mixed methods approach to facilitate comparison between the different methods of data collection, as well as to allow for in-depth understanding of LIS students' perspectives on the implementation of blended learning in LIS education and training.

The researcher should use an appropriate sample, usually purposive or snowball and the participants should be knowledgeable or experienced with regard to the topic of investigation (Cohen, Manion and Morrison 2007: 377). This study used purposive and snowball sampling to identify students that were exposed to blended learning interventions. The LIS educators in the face-to-face interviews identified students who were exposed to blended learning interventions and the students also identified other students who were exposed to blended learning. The researcher attempted to include students from different levels of study in the focus group discussions.

There is variation in the literature with regard to the size of the focus group. Morgan (1996: 131) and Groves et al. (2009: 270) suggest 6 to 10 participants, while Krueger and Casey (2000) characterise a focus group as having 5-10 participants and Kelly (1999: 389) suggests that the focus group should consist of not more than twelve and not fewer than six participants. The focus groups for this study ranged from six to twelve participants (refer to Section 4.4.6 for a more detailed breakdown of the focus group activity). All participants were required to sign consent forms before the start of focus group discussion (see Appendix G).

The focus group discussion starts with general questions based on the aim and purpose of the research. The purpose of using general questions first is to elicit the first responses from the participants in order to get the discussion started. The researcher can then move to more structured questions to obtain specific information. Ideally the researcher should not ask more than ten to twelve questions during the focus group discussion for the duration of one to two

hours (Leedy and Ormrod 2005: 14; Welman, Kruger and Mitchell 2005: 2026). For this study the researcher only chose students who were exposed to blended learning intervention in their respective institutions of study. The focus group discussions began with an 'ice breaker' and then students were debriefed on the topic and given an information sheet (refer to Appendix E). More general questions were asked in order to make the students comfortable and to get the discussion started, followed by more structured questions asked to obtain more specific information (refer to Appendix G). Seven questions were asked and each focus group discussion was carried out within the duration of fifty minutes to two hours (refer to Section 4.4.6 for a more detailed breakdown of the focus group activity).

4.4.5 Pretesting of instruments and pilot study

According to Sekaran and Bougie (2010: 210) it is important to pretest the data gathering instruments to ensure that the questions are understood by the respondents or participants; to ensure that there is no ambiguity in the questions and that there are no problems with the wording or measurement. Pretesting involves the use of a small number of participants to test the appropriateness of the questions and their comprehension. Pretesting helps to rectify any inadequacies before the instruments are administered. It is better to complete the questionnaire and conduct the interviews rather than read through it looking for errors (Babbie 2008: 283). This reduces bias. A pilot study involves a brief exploratory investigation to try out particular procedures, measurement instruments or methods of analysis, as a way of determining the feasibility of a study (Leedy and Ormrod 2010: 110). The principal function of a pilot is to increase the reliability, validity and practicability of the research instruments (Cohen, Manion and Morrison 2007: 341). A pilot study also allows the researcher to test several variables and to iron out any initial problems before preparing the broad plan that will direct the remainder of the research project (Gorman and Clayton 1997: 99-100). For this study a pretest was done for the initial exploratory Web survey question and a pilot study was conducted for the second qualitative phase of the study.

When developing and designing questionnaires, and interview and focus group discussion schedules, questions may be ambiguous or misleading or may yield useless or uninterpretable responses. Weak spots in questions can also be identified when conducting a pilot study. The researcher can save a great deal of time by fine-tuning the instruments before collecting data (Leedy and Ormrod 2005: 188).

In this study, the researcher pretested the Web survey questionnaire using a sample of three LIS educators from three different higher education institutions and one staff member from the Centre for Excellence in Learning and Teaching (CELT) at the Durban University of Technology. The survey questionnaire was delivered using e-mail addresses and the token system to also test the delivery method of the Web survey questionnaire. Respondents were asked to click on the link and complete the questionnaire. They were also asked to:

- Comment on the clarity of the questionnaire items, instructions, layout and ease of use with regard to navigating the web survey questionnaire;
- Comment on the construction of the questions;
- Ascertain for readability levels of the questions;
- Identify omissions, redundant and irrelevant items; and
- Take note of the time taken to complete the questionnaire.

Respondents indicated that it was easy to navigate through the Web questionnaire. Ambiguous and double barrelled questions that were identified by the pretest respondents were subsequently rectified. Further options suggested for the closed items were included and it was ensured that the options for the closed items in the Web survey questionnaire were exhaustive. Some clarification was required for certain concepts used in the open-ended items. This was also corrected before the questionnaire was finalized for administering to all LIS educators. The pretest was conducted over a period of two weeks during June 2010. The LIS educators and CELT staff member who pretested the Web survey questionnaire were not included in the main survey as they were exposed to the instrument and would have biased the results of the main Web survey.

The semi-structured interview schedules for face-to-face interviews with LIS educators, telephone interviews with facilitators of blended learning, and focus group discussions were piloted. An information sheet explaining key concepts in the study were prepared for the LIS students participating in the focus group discussions (refer to Appendix E). The pilot focus group consisted of eight students from the different levels of study (two students from the first level of study, three students from the second level of study and three students from the third level of study) from the LIS programme at the Durban University of Technology. The level of study indicates year of study, for example, second level of study indicates that students are in their second year of study in a three-year qualification or programme. A trial run of the focus group discussion process was conducted on 1 March 2012, which included

students signing the consent forms, following the interview schedule for focus group discussion (see Appendix G), and the researcher recording and timing the session. This informed the researcher that the focus group discussion process could be completed in two hours and that the discussion schedule and information sheet did assist in facilitating the discussion.

Three LIS educators were chosen from three different higher education institutions for the pilot face-to-face interviews. Two of the LIS educators were chosen for their years of experience (one with 28 years of experience in LIS education and training) and one new LIS educator. All three have been using technology in their teaching and learning. The face-to-face interviews for the pilot study were conducted on 2 March 2012, 6 March 2012 and 7 March 2012. The semi-structured telephone interviews were piloted on 13 March 2012, 16 March 2012 and 18 March 2012, with three facilitators from departments facilitating teaching and learning at three different higher education institutions.

Pilot participants were informed that they were part of a pilot study and would not take part in the main qualitative phase of the research project. Participants of the pilot project were briefed on what they were required to do. They were asked to comment on whether the questions were clear, whether they were appropriate and if there were other questions or issues that should be included. The pilot study was also used to test the language, the context of the contents and length and approach of the interviews. The pilot was also used to 'test' the researcher herself with regard to:

- How did I present myself?
- How should I dress and conduct myself?
- How do I relate to participants?
- How did I establish rapport with the participants?

Acquainting oneself with an institution's rules and expectations, its major actors and its taboos (a social custom that places prohibition or restriction on a particular thing or person) can direct the researcher to personal behaviour that will help gain access to a social setting (Gorman and Clayton 1997: 100). The pilot enabled the researcher to become more aware and knowledgeable about the individual institution's rules and expectations, key individuals in the institutions that the researcher needed to interface with to carry out the research and how to relate to the participants in the study in order to establish a good rapport with them.

This assisted the researcher to conduct the interviews and focus group discussions with confidence.

4.4.6 Procedures followed in administering of instruments and data collection

In conducting the research for this study, several specific procedures were used. The procedures used to carry out this study are explained in this section.

Once the study had been approved by the Accounting and Informatics Faculty Research Committee (FRC) at the Durban University of Technology (DUT) with which the study is registered and ethical clearance for the study was granted (refer to Appendix H) the researcher approached the ten higher education institutions that offer LIS education and training in South Africa (listed in Section 4.4.1) for permission to conduct research at these institutions. Eventually only 9 HEIs were included in the study. Walter Sisulu University was excluded for reasons already explained in Section 4.4.2. The heads of departments of each LIS department or programme of the HEIs included in this study was contacted seeking permission to conduct research. The requirements for seeking permission for each institution were different and proved challenging and a very time-consuming task. Some heads of departments granted permission to conduct research telephonically or via e-mail, while other institutions clearly outlined the requirements for obtaining permission which the researcher complied with and obtained the necessary permission. The researcher compiled a database of the LIS educators with their contact details. This was an arduous task as the researcher had to obtain these details from the institutional websites and there was no consistency with regard to obtaining details of LIS educators. Some sites did not provide the contact details of the LIS educators which meant that the researcher had to contact the LIS departments at the institutions telephonically or via e-mail. Contact details for these institutions were only released to the researcher after the permission to conduct research was granted by the institution.

The population for the first phase of the study, that is, the exploratory Web survey was 62 LIS educators (Department of Arts and Culture 2010: 100). Some LIS educators indicated that they would not be able to participate in the study as they would be on leave. A total of 55 Web survey questionnaires were eventually sent out to LIS educators from 13th July 2010 until 29th November 2010. The Web survey was administered to 55 LIS educators of which 39 (71%) participated. Two of these responses could not be used due to many responses being incomprehensible; therefore a total number of 37 (67%) responses were used. The

questionnaire results were transferred into a Microsoft Excel spreadsheet ready for analysis. The data was then analyzed using *PASW (Predictive Analytics SoftWare)* Statistics version 18.0 software (previously known as *SPSS (Statistical Package for the Social Sciences.)*). The results from the exploratory survey were used to plan the qualitative second phase of this study. These results firstly informed the sampling procedures (see Section 4.4.3) and, secondly, also pointed towards the types of questions to be asked in the second qualitative phase of the research.

The qualitative second phase of the study included semi-structured face-to-face interviews with LIS educators, semi-structured telephone interviews with institutional facilitators of blended learning and focus group discussions with LIS students. Fifteen LIS educators that indicated in the exploratory Web survey that they used blended learning. A semi-structured interview schedule was used (refer to Appendix B). Each LIS educator chosen for the semi-structured interview was contacted personally by telephone and/or e-mail correspondence prior to data collection to introduce the researcher and negotiate the interview date and time that was most convenient for the participant. At the time of the face-to-face interview, each participant was requested to sign a consent form (refer to Appendix C). This form outlined the study, benefits, extent of confidentiality and also requested permission to audio tape the interview. Before the commencement of each interview each educator was notified of his/her right to participate voluntarily without any physical or psychological coercion and that the educator had the right to withdraw from the study at any time. The confidentiality of the educators was assured and that all data would be secured or concealed and made public only with anonymity. Each participant was also informed that they would have the opportunity to review a transcribed copy of the interview before its analysis if he/she so desired. A list of the face-to-face interviews with LIS educators is shown in Table 4.1.

Table 4.1**Face-to-face interviews with LIS educators**

Number	Date	Participants	Duration of interview	Institution
1	11/04/2012	Educator A	35 minutes	University of Zululand
2	14/05/2012	Educator B	29 minutes	University of Pretoria
3	25/04/2012	Educator C	31 minutes	University of South Africa
4	11/04/2012	Educator D	67 minutes	University of South Africa
5	12/04/2012	Educator E	35 minutes	University of Fort Hare
6	12/04/2012	Educator F	37 minutes	University of Pretoria
7	23/05/2012	Educator G	10 minutes	University of Limpopo
8	11/04/2012	Educator H	35 minutes	University of South Africa
9	23/05/2012	Educator I	15 minutes	University of Pretoria
10	23/05/2012	Educator J	24 minutes	University of the Western Cape
11	12/04/2012	Educator K	52 minutes	University of Zululand
12	14/05/2012	Educator L	70 minutes	University of Fort Hare
13	24/04/2012	Educator M	80 minutes	University of Fort Hare
14	17/05/2012	Educator N	31 minutes	University of the Western Cape
15	23/05/2012	Educator O	26 minutes	University of South Africa

Semi-structured telephone interviews were conducted with ten facilitators of blended learning. The participants were chosen from the six higher education institution that indicated in the exploratory Web survey that they had a centre for teaching and learning that facilitated blended learning. Each participant chosen for the semi-structured telephone interview was contacted personally by telephone and/or e-mail correspondence prior to data collection to introduce the researcher and negotiate the interview date and time that was most convenient for the participant. Each participant was requested to sign a consent form (refer to Appendix C). This form outlined the study, benefits, extent of confidentiality and also requested permission to audio tape the interview. The signed consent forms were faxed or scanned and e-mailed to the researcher prior to the telephone interview. A semi-structured interview schedule was used (refer to Appendix D) for the telephone interviews with facilitators of blended learning. Each telephone interview lasted approximately 15 minutes in line with the

guidelines mentioned in Section 4.4.4.2.2. A list of the telephone interviews conducted with institutional facilitators of blended learning is shown in Table 4.2.

Table 4.2

Telephone interviews with facilitators of blended learning

Number	Date	Participants	Duration of interview	Institution
1	22/02/2012	Facilitator 1	23 minutes	University of Pretoria
2	23/03/2012	Facilitator 2	18 minutes	University of Pretoria
3	24/04/2012	Facilitator 3	13 minutes	University of Pretoria
4	18/04/2012	Facilitator 4	20 minutes	University of South Africa
5	18/04/2012	Facilitator 5	17 minutes	University of Limpopo
6	08/05/2012	Facilitator 6	15 minutes	University of Fort Hare
7	08/05/2012	Facilitator 7	15 minutes	University of Limpopo
8	08/05/2012	Facilitator 8	15 minutes	University of Limpopo
9	17/05/2012	Facilitator 9	10 minutes	University of the Western Cape
10	29/05/2012	Facilitator 10	20 minutes	University of Pretoria

Six focus group discussions were carried out with LIS students from the six higher education institutions gleaned from the exploratory Web survey as conducting blended learning interventions. The students were chosen from the six institutions (using cross tabulation of the LIS educators who that indicated in the exploratory survey that they used blended learning and the institutions that they were affiliated to). A consent form (refer to Appendix F) was signed by each student participating in the focus group discussion. This form outlined the study, benefits, extent of confidentiality and also requested permission to audio tape the interview. Students were also notified of their right to participate voluntarily without any physical or psychological coercion and that any student had the right to withdraw at any time. The students were assured of confidentiality relating to the information provided and that all data would be secured or concealed and only made public with anonymity.

The researcher welcomed the students, provided an overview of the topic, and explained the purpose of the focus group discussion. The researcher then outlined the ground rules (refer to Appendix G). An information sheet (refer to Appendix E) was given to students before the

discussion to familiarise them with the concepts used in the study so that the group would have a common understanding of concepts of blended learning and learning styles. A brief summary of the initial findings from the Web survey of LIS educators and the review of literature for this study was also included in the information sheet. The reason for including this was, firstly, to inform students of the initial findings from the Web survey of LIS educators and aspects from the literature review that addressed the critical questions that had been raised by the research objective and secondly, to elicit responses from the students so that the researcher obtained the students' perspectives on these issues. The researcher used a focus group discussion schedule (refer to Appendix G) for effective facilitation of the discussions. A list of the focus group discussions with LIS students exposed to blended learning interventions is shown in Table 4.3.

Table 4.3

Focus group discussions with LIS students

Number	Date	Focus group	Number of participants	Duration of focus group discussion	Institution
1	12/04/2012	Focus group 1	8	1 hour	University of South Africa
2	14/05/2012	Focus group 2	12	52 minutes	University of Pretoria
3	26/05/2012	Focus group 3	6	70 minutes	University of the Western Cape
4	17/05/2012	Focus group 4	12	51 minutes	University of Fort Hare
5	23/05/2012	Focus group 5	9	50 minutes	University of Limpopo
6	12/06/2012	Focus group 6	6	50 minutes	University of Zululand

4.4.7 Validity and reliability

According to Leedy and Ormrod (2005: 28) the “validity of a measurement instrument is the extent to which the instrument measures what it is supposed to measure” and reliability is “the consistency with which a measuring instrument yields a certain result when the entity being measured has not changed” (Mouton 1996: 146; Cohen, Manion and Morrison 2007: 134; Neuman 2011: 377). Cronbach’s alpha is a statistic that is calculated to assess the extent to which items are correlated and should be highly correlated to indicate that they all measure the same thing (Wilson and Sapford 2006: 121). The Cronbach alpha was used to measure internal consistency of the data in the Web survey. The coefficient was calculated using the *PASW Statistics version 18.0* software and the values ranged between zero and one. The figures closer to one generally indicate a high reliability. A reliability coefficient of 0.7 to 0.8 or higher is considered as satisfactory (Bland and Altman 1997: 572; Connelly 2011: 45; Groves et al. 2009: 285). The overall reliability score of 0.754 for the ordinal questions for the section on Educational Support (three in total) (refer to Appendix A) can be considered as satisfactory in consistent scoring for this category of the research.

A precondition for attaining validity in research is objectivity. Objectivity needs to be followed in each stage of the research process. Objectivity can be attained in research by taking decisions and making judgments to avoid certain pitfalls that can lead to bias and error. The pitfalls or threats to objectivity and validity include: vague research questions, biased instruments, biased sampling that are too small and conclusions that are not supported by the evidence (Mouton 1996: 112). The researcher in this study ensured that the research questions were clear. The instruments used in the Web survey, in the semi-structured face-to-face and telephone interviews as well as in the focus group discussions were pretested and piloted to eliminate any bias. The sample size for the qualitative aspects of the study, purposive sampling of 15 LIS educators for the semi-structured interviews, 10 facilitators of blended learning and six focus group discussions from the six higher education institutions identified as offering blended learning interventions in LIS education, were in accordance with Guest, Bunce and Johnson’s (2006: 74) sample recommendation for reaching data saturation utilizing a homogeneous sample. However it is useful to note that the term ‘validity’ does not carry the same connotations in qualitative research (Creswell 2014: 201). It is suggested, rather, that terms such as trustworthiness, credibility, plausibility and dependability be used (Gorman and Clayton 1997: 62; Onwuegbuzie and Johnson 2006: 55). The use of multiple data sources of data collection, as done in this study enhances the

researcher's ability to assess the accuracy of the findings and to convince the reader of that accuracy (Creswell 2014: 201).

Triangulation can be defined as the use of two or more methods to enable the researcher to address different aspects of the same research question thereby extending the breadth of the research project. It can also be seen as a procedure for the cross-validation of information. The use of multiple methods used in this study contributed to the validity of the study (Creswell 2014: 201). Multiple sources of data collection in a research project are also likely to increase the reliability of the observations (Mouton 1996: 156). The quality of the research can be improved when information from several sources about the same event or behaviour is collected (Gorman and Clayton 1997: 32; Cohen, Manion and Morrison 2007: 141). The underlying assumption is that because various methods complement each other their respective shortcomings are balanced out. Both quantitative and qualitative data collection methods were used in the current research. Interpretive validity was promoted, as the outcomes from the Web survey were used to support the design of the semi-structured interviews with LIS educators, telephone interviews with facilitators of blended learning and focus group discussions with LIS students.

Reliability demands consistency over time where different research participants being tested by the same instrument at different times should respond identically to the instrument. The reliability of data can be affected by the researcher, the research participant and the research context (Mouton 1996: 144). Pitfalls or threats to reliability during data collection include: lack of clear and standard instructions; measurement instruments that describe items ambiguously so that they are misinterpreted; abstract concepts are not measured with enough indicators of equal kind and administration of data collection conditions differ; lack of pretesting; not all alternatives are provided; the questions are not presented in a proper order; the questionnaire is too long and difficult to read and the interview takes too long (Fink and Kosecoff 1985: 50; Kerlinger 1964: 442-3; Leedy and Ormrod 2010: 94). In this study most of the threats to reliability were alleviated with the pretesting and pilot. Although the Web survey questionnaire was long, using radio buttons to click on options and the easy navigation of the Web survey questionnaire enabled the respondents to complete the Web survey within 25 to 30 minutes as indicated by the respondents in the pretest of the Web survey. Interviews were conducted within recommended time limits; face-to-face interviews lasted for between twenty five minutes to an hour, telephone interviews twenty to thirty minutes each and focus group discussions with LIS students lasting fifty minutes to two

hours. The researcher strived for validity and reliability by rigorous pretesting and piloting of the research instruments used in the study.

4.5 Data analysis

Data analysis consists of examining the data and the research questions generated to address the objective of the study. Data is analysed by identifying patterns and themes in the data and then drawing conclusions from them. Quantitative analysis consists of the numerical representation of observations for the purpose of describing and explaining the phenomena. Qualitative analysis refers to the non-numerical examination and interpretation of observations for the purpose of discovering underlying meaning and patterns of relationships. The aim of the data analysis is to understand the elements of the data by investigating the existence of relationships between concepts, constructs with the use of descriptive and inferential statistics (Babbie 2008: 122, 415, 443). In the initial quantitative phase of this study descriptive and inferential statistics were used to show the different elements of the data that addressed the research questions and the relationships between the different concepts with reference to blended learning that was used in this study. The data from the different data collection sources were then integrated in the discussion of the findings for the purpose of discovering meanings and patterns in the data and explaining relationships in the study findings with regard to the phenomenon of blended learning.

Data analysis begins with data reduction by checking the consistency and completeness of the information. Missing data or miscoded data is detected. The other stages are data display and verification. Verification enables the researcher to make interpretations and to draw meanings from the displayed data (Leedy and Ormrod 2005: 246). As part of this process for the initial quantitative phase of this study, the researcher began the data reduction by checking the responses. The Web survey was administered to 55 LIS educators of which 39 (71%) participated. Two of these responses could not be used due to many responses being incomprehensible; therefore a total number of 37 (67%) responses were used.

Descriptive statistics consists of three groups, namely, frequency counts and frequency distributions, graphical representations of data and summary statistics. In this study descriptive statistics included measuring the mean, frequency, range, variance and standard deviation. Inferential data analysis allowed the researcher to draw conclusions about the population.

The quantitative phase involved quantitative analysis of the findings emanating from the Web survey in this study. The data collected from the responses were analysed with the *PASW Statistics version 18.0*. The results were presented in the form of graphs, cross tabulations and other figures. The software *PASW Statistics* programme simplified data coding presentation and analysis of data from the Web survey. Frequency tables with appropriate labels, values and frequencies, percentages were produced. The Web survey was also imported into *NVivo 10 for Windows* software package where open-ended questions or items were coded into themes.

The mixed analysis phases involved the quantitative analysis of codes and themes extracted from the qualitative analysis. Leedy and Ormrod (2005: 150) state that there is no right or wrong approach to data analysis in qualitative research. Qualitative data analysis was carried out on the transcriptions of the face-to-face interviews with LIS educators, telephone interviews with facilitators of blended learning and focus group discussions with LIS students, with thorough content and thematic analysis. Content and thematic analysis is based on the examination of the data for recurrent instances of some kind, these instances are then systematically identified across the data set and grouped together by a coding system (Gelo, Braakmann and Benetka 2008: 276). Coding can be seen as a process of organizing the data and labelling portions of the data so as to get a general sense of it (Creswell 2014: 241). The content of each transcript was coded meaning that sentences, paragraphs and sometimes sections of the transcripts were allocated a node. A node is a term that is used to refer to themes, ideas or keywords that were abstracted from the data.

Since this study used the used the “fully mixed sequential dominant status design” (Leech and Onwuegbuzie 2009: 268), the data from the Web survey were analysed first, where, the closed questions (quantitative data) in the Web survey was analysed using *PASW Statistics version 18.0 software* while the open-ended items (qualitative data) from the Web survey were grouped into themes and presented in tables with frequencies and percentages and in narration of themes. The results were then used to plan the qualitative follow up interviews with LIS educators and facilitators of blended learning and focus group discussion with LIS students exposed to blended learning interventions. The researcher interpreted the results of both the quantitative and qualitative data (the latter was given more weight), compared the findings (refer to chapter 5) with theories (presented in Chapter 2) and the literature (reviewed in Chapter 3) in the discussion section (refer to Chapter 6) of the study.

4.6 Ethical issues

Webster's dictionary (2003) defines ethical as "conforming to accepted standards of social or professional behavior". Guba (1990: 158) propounds three basic principles for ethics in research: "the principle of mutual respect, of non-coercion and non-manipulation and of support for democratic values of the institutions". Mertens (1998: 23) emphasizes that ethics in research should be an integral part of the research planning and implementation process. Issues such as personal disclosure, authenticity, the role of the researcher, the credibility of the research report and personal privacy apply to quantitative, qualitative and mixed methods research and to all stages of the research process (Cresswell 2014: 92).

Other key issues that need to be considered when collecting data include: studies should be done to better the purpose of the organization and not for self-serving reasons; a valid research design needs to be used; the researcher needs to respect the confidentiality of the data obtained; one of the primary responsibilities of the researcher is treating the information given by the respondent as strictly confidential and guarding his or her privacy; the purpose of the research needs to be explained to respondents or participants and the researcher should not misrepresent the nature of the study to the respondents or participants; individuals should not be forced to respond to the survey and if anyone does not want to avail themselves of the opportunity to participate, the individual's desire should be respected; the researcher should obtain voluntary informed consent from the respondents or participants, even for recording interviews and videotaping; there should be no misrepresentation or distortion in reporting the data collected during the study; the respondent or participant once having agreed to participate in the study, needs to cooperate fully in responding to a survey or taking part in an experiment. The respondent or participant has an obligation to be truthful and honest in the responses; and the subjects should not be exposed to situations where they could be subject to physical or mental harm (Cohen, Manion and Morrison 2007: 51-53; Durrheim and Wassenaar 1999; Mertens 1998: 24; Sekaran and Bougie 2010: 220).

Prior to the commencement of this study, ethics clearance to conduct this study was obtained from the Durban University of Technology (see Appendix H) with which this study is registered. The researcher then sought official permission to conduct research from the nine institutions (listed in Section 4.4.1) offering LIS education and training in South Africa. This was done by contacting the ten universities telephonically and via e-mail. Identifying the official channels for obtaining permission to conduct research was difficult with some

institutions. The requirements for seeking permission for each institution were different and proved challenging and was a very time consuming process. Time delays were experienced where research ethics committees only met quarterly and at times documents submitted by the researcher to the institution were not forwarded to the research ethics committees timeously. Eventually, permission from nine of the institutions (listed in Section 4.4.1) offering LIS education and training in South Africa was obtained, some telephonically and some via e-mail. Wassenaar (2006: 63) points out that there is a resistance by some researchers to ethical review of research with the main principled objections being “ethical constraints on research are a curtailment of academic freedom”. The primary reason for this resistance by some researchers is the assumption by ethical committees at institutions that researchers will behave unethically unless prevented from doing so. Furthermore, the ethical clearance for social research should be looked at separately from biomedical research as generally social science research carries a lower risk than biomedical research (Wassenaar 2006: 63). The pragmatic objections for this study include the time delays involved in obtaining ethical review and competencies of the research ethical committees regarding in the technical and ethical aspects of this study.

All participants in the research voluntarily signed a letter of informed consent (refer to Appendices C and F). Confidentiality of the participants’ submissions was maintained by not making direct reference to their personal particulars or details of their educational institutions. The purpose of the research was outlined clearly to all participants in the covering letter (refer to Appendix I). No individual was forced to respond to the survey or to participate in the interviews and focus group discussions. The token management system was used to generate a unique token number for each respondent in the exploratory web survey. The researcher in the introduction to the Web survey questionnaire and in the covering letter (refer to Appendices A and I) assured the respondents that anonymity and confidentiality will be maintained by capturing the data responses automatically onto a secure database with only the researcher having access to the data. Some educators indicated that they were unable to avail themselves to complete the Web survey questionnaire and this was respected. The research participants were treated with respect, dignity and fairness and no harm was allowed to befall any of them. The ethical principles discussed above do not exhaust all the moral principles in research, but cover the main relevant ethical issues. The researcher made every effort to comply with the main relevant ethical principles that are applicable to research by ensuring that voluntary informed consent was obtained for all the participants of the study

and protecting the participants by ensuring individual confidentiality was kept. The participants were also made aware of the proposed benefits of the research.

4.7 Evaluation of the research methodology

According to Cohen, Manion and Morrison (2007: 38) evaluation of research methodology aims at determining the effectiveness of the methodology in meeting the objective of the study. The present study employed mixed methods research (as explained in Section 4.3.2). Mixed methods research was deemed to be appropriate for this study considering the number of critical questions (both quantitative and qualitative in nature) that were generated to address the objective of the study. It would not have been feasible to address all the research question using a monomethod. Furthermore the use of mixed methods research supported the choice of pragmatism and interpretivism as the epistemological lenses for this study (as explained in Section 4.2.5).

Gray (2009: 36) argues that triangulation is the core strength of the mixed methods design. The collection of data, in this study, from the different sources over different times made possible the triangulation of findings. Furthermore, triangulation promoted interpretive validity and the extent to which the conclusions drawn from the quantitative data collected supported the qualitative instruments used in this study.

Mixed methods research acknowledges that quantitative and qualitative methods used separately offer a one-sided glimpse of the social world, and have shortcomings that may be overcome when the strengths of both methods are combined in answering research questions. The use of mixed methods therefore increases the overall confidence in the findings of the study (Ngulube 2010: 255). Using mixed methods for this study enabled the researcher to ascertain a holistic view of the state of blended learning in LIS education and training in higher education institutions in South Africa.

According to Sekaran and Bougie (2010: 19) “a good theoretical base and a sound methodological design add rigor to a purposive study”. This study is supported by a theoretical framework (presented in Chapter 2). The inclusion of all higher education institutions that offer education and training in LIS made in possible for the researcher to collect the required information (note that there was no response from one of the institutions with a small staff complement of three). To contribute to the rigor of the study and in an attempt to increase its reliability, a pretest of the instruments and a pilot study were carried

out (refer to Section 4.4.5 of this chapter). The feedback from the pretest and the pilot study yielded more accurate and comprehensive research instruments. The pilot testing also contributed to reducing interviewer bias so that the findings could be trusted.

Sekaran and Bougie (2010: 22) states that generalizability “refers to the scope of applicability of the research findings in one organizational setting to other settings”. Sekaran and Bougie (2010: 22) also mentions that the researcher needs to have a logically developed sampling design and that all the other details in the data collection methods need to be meticulously followed. The researcher used a census for the first phase of this study followed by a logically developed sampling design for the second phase (refer to Section 4.4.3). The procedures followed in administering of instruments and data collection were also meticulously followed by the researcher (as explained in Section 4.4.6). Hence the researcher feels confident about the generalizability of the findings from this study as well as the fact that these findings rest on a logically developed sampling design and data collection plan.

The researcher is confident that the design, approach and methods that were employed in this study were appropriate for responding to the research questions that were generated to address the objective of this study. The overall methodology adopted allowed the researcher to ascertain and understand the complexities and dynamics affecting blended learning for better understanding of the use of this phenomenon in LIS education and training at higher education institutions in South Africa.

4.8 Summary

Chapter Four introduced and clarified the use of the key concepts in the research design and methodology. The researcher then addressed the different paradigms that were applied in the research study. The general approach of the research was discussed with a detailed discussion of quantitative, qualitative the mixed methods approaches. In order to satisfy the interpretive paradigm as one of the paradigms adopted for this study, the research context, the research setting and research participants, survey population and sampling used in this study were discussed in detail. The various data collection instruments, used in the study, namely; Web survey, interviews and focus group discussions, have been discussed. The issue of ensuring validity and reliability of the research instruments were explored. This chapter also looked at the ethical issues that the researcher took into consideration in carrying out the study. The chapter concluded with an evaluation of the methodology adopted for the study. The next chapter focuses on the presentation of the research findings.

Chapter 5: Presentation of Research Findings

5.1 Introduction

Chapter 4 focused on the research design and methods that were employed in this study. This study involved a two-phase project in which the researcher collected quantitative and qualitative data using open-ended and closed items in a Web-based exploratory survey for the first phase. The results were analyzed, and were then used to inform the second qualitative phase of the research. This chapter presents the findings from the Web survey (refer to Appendix A) administered to LIS educators, face-to-face interviews with LIS educators (refer to Appendix B), telephone interviews with institutional facilitators of blended learning (refer to Appendix D) as well as the findings from the focus group discussions with LIS students exposed to blended learning (refer to Appendix G). The Web survey was administered to 55 LIS educators of which 39 (71%) responded. Two of these returned questionnaires could not be used due to many responses being incomprehensible, resulting in a total number of 37 (67%) returned questionnaires being used. The results of the Web survey informed the purposive sampling of the participants for the second phase of the research, namely, the semi-structured interviews with LIS educators, semi-structured interviews with institutional facilitators of blended learning and focus group discussions with LIS students. The results of the Web survey indicated that fifteen (15) LIS educators were using blended learning interventions; ten institutional facilitators of blended learning were interviewed and six focus group discussions were conducted with LIS students from those institutions indicated that they were using blended learning interventions. The results from the Web survey also informed the types of questions asked of participants in the interviews and focus group discussions.

5.2 Reliability and validity

According to Bless, Higson-Smith and Kagee (2006: 156) the two most important aspects of precision in research are reliability and validity. Reliability is computed by repeating measurements on the same subjects where the consistency with which the measurement instrument measures is constant. Validity refers to whether the measurement instrument measures what it is supposed to measure (Leedy and Ormond 2005: 28). To improve the validity of this study the researcher used multiple data collection instruments, namely, Web survey, semi-structured face-to-face and telephone interviews as well as focus group

discussions which were all pre-tested and piloted. Reliability and validity have been discussed in more detail in the previous chapter (Section 4.4.7 of Chapter 4).

5.2.1 Reliability statistics

In this study the Cronbach’s alpha was used to measure internal consistency of the Web survey response scale. According to Connelly (2011: 45) a scale has internal consistency when all the items measure the same attribute or construct. The construct that was measured in the Web survey was the section on educational support for both teaching staff and students (refer to Appendix A, Section C of the Web survey questionnaire). Furthermore, this section was used as it consisted of dichotomous and multi-point questions. Santos (1999) and Tavakol and Dennick (2011: 53) state when “indexed responses to dichotomous” or “multi-item measures” scales are used in survey instruments, the researcher can probe underlying constructs. Cronbach’s alpha can be used to determine the internal consistency or the average correlation of items in a survey instrument to check its reliability.

Cronbach’s alpha is calculated to assess the extent to which items in a scale are correlated (Wilson and Sapsford 2006: 121). The coefficient was calculated using the *PASW (Predictive Analytics SoftWare) Statistics version 18.0* software computer package, originally named *SPSS (Statistical Package for the Social Sciences)*. The values range between zero and one and the figures closer to one generally indicate a high reliability. A reliability coefficient of 0.70 to 0.80 is regarded as satisfactory especially for comparing groups (Bland and Altman 1997: 572; Connelly 2011: 45; Groves et al. 2009: 285). In the study the ordinal questions for the Section on Educational support (refer to Appendix A, Section C) were used to check the internal consistency of scale in the Web survey. The reliability scores for the ordinal questions for the section on Educational Support (3 in total) were determined and the results are shown in Table 5.1. The overall reliability score of 0.754 indicates a satisfactory degree of acceptability in consistent scoring for this category of the research.

Table 5.1
Reliability statistics

Cronbach's Alpha	Number of Items
.754	3

5.3 Pre-analysis considerations

The raw data needed to be converted into a form that was useful for data analysis (Creswell and Plano Clark 2011: 204). The researcher firstly needed to consider the purpose of the mixed methods research study. The researcher consulted the list of purposes for mixed methods research by Greene, Caracelli and Graham (1989: 259) which included triangulation, complementary, development, initiation and expansion (discussed in detail in Section 4.3.2 of Chapter 4). The aim was to examine the quantitative and qualitative strands to determine the degree to which they yielded complementary results with regard to understanding the blended learning phenomenon. The complexity of the blended learning phenomenon in the context of LIS education and training had to also be taken into consideration by the researcher. The initial understanding gained from the qualitative analysis and how this expanded on the initial findings of the quantitative data was also considered. The findings from the Web survey were used to corroborate findings that were generated from the face-to-face interviews with LIS educators, semi-structured telephone interviews with facilitators of blended learning and focus group discussions with LIS students exposed to blended learning interventions.

The researcher had to take into consideration whether the study was exploratory or confirmatory (where the investigation is aimed at testing the propositions based on a theory or conceptual framework) (Teddlie and Tashakkori 2009: 265). This study used the exploratory Web survey and the interviews and focus group discussions for confirmatory purposes.

The study used a fully mixed sequential dominant status design (discussed in detail in Section 4.3.2.1 in Chapter 4). The researcher collected the quantitative data in the first phase and analyzed the results to plan the second qualitative phase. The results of the analysis of the Web survey informed and shaped the types of participants that were purposefully selected as well as the types of questions that were asked of the participants in the interviews and focus group discussions.

The researcher also had to consider what data analysis tools to use. Computer-assisted software, *PASW Statistics version 18.0* was used to analyse the data from the Web survey for the first phase of the study and *NVivo 10 for Windows* software was used for the analysis of the qualitative data from the various sources for this study, namely, the open-ended items

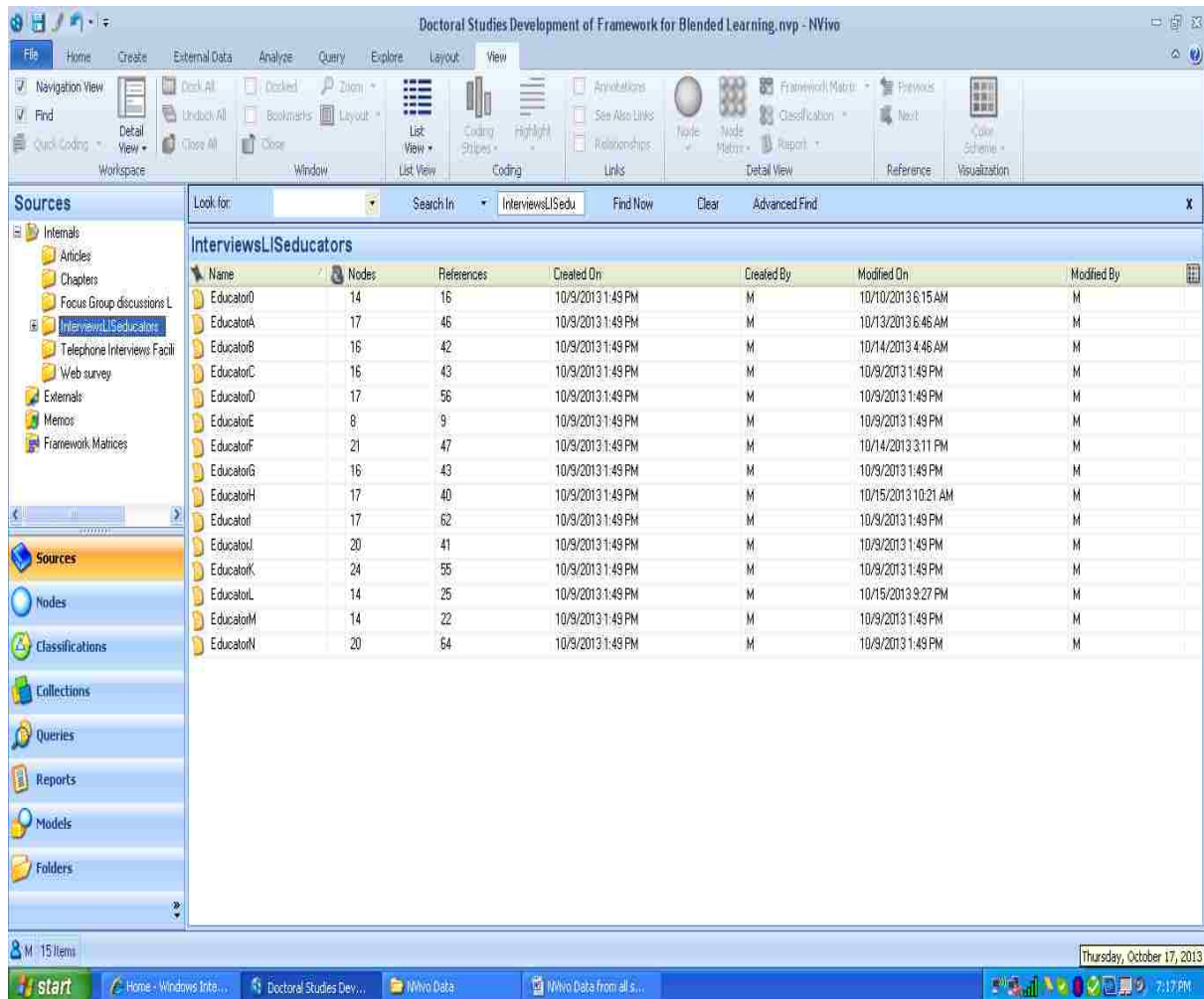
from the Web survey, the face-to-face interviews with LIS educators, telephone interviews with institutional facilitators of blended learning and focus group discussions with LIS students.

5.4 Preparing the data for analysis

Fields in the Web survey (refer to Appendix A) were coded by assigning numeric values. Incomplete questionnaires were assessed for degree of incompleteness. The degree of incompleteness was minor in the non-mandatory fields; these questionnaires were included in the analysis. The data was imported from the *LimeSurvey* database to an Excel spreadsheet where the data entry errors were cleaned and prepared for exporting to *PASW Statistics version 18.0*. The interviews were recorded on a digital recorder with the permission of the participants. The MP3 files were saved and transcribed as text files. The Web survey data and the three sets of interview data for face-to-face interviews with LIS educators, semi-structured telephone interviews with facilitators of blended learning and focus group discussions with LIS students exposed to blended learning interventions, were transcribed and then imported into *NVivo 10 for Windows* software (refer to Figure 5.1). The screenshot in Figure 5.1 shows the NVivo workspace that provides easy access to the project material relating to the study. The screenshot highlights the contents of the folder containing the interviews with LIS educators in List View. The contents of each folder were coded meaning that sentences, paragraphs and sometimes sections of the transcripts were allocated a node. A node is a term that is used to refer to themes, ideas or keywords that were abstracted from the data.

Figure 5.1

Screenshot taken of data sources imported into NVivo 10 for Windows



5.5 Presentation of findings

Data was collected from a Web questionnaire to LIS educators, face-to-face interviews with LIS educators, semi-structured telephone interviews with facilitators of blended learning and focus group discussions with students exposed to blended learning interventions.

Descriptive statistics were employed for the analysis of the Web survey results and the findings are presented using tables, graphs and narratives. Thematic analysis was used for the analysis of the open-ended questions from the Web survey, interviews and focus group discussions. The findings are presented in this chapter according to themes addressing the study's objective and critical questions generated to address this objective:

Objective of the study

The broad objective of the study was to explore the educational and pedagogical issues in blended learning for the development of a framework for designing and implementing blended learning in the delivery of LIS curricula in South African universities.

Critical questions generated to meet this objective included:

- What are the educational benefits of blended learning for LIS programmes in South Africa?
- What learning theories are used in the educational design and facilitation of blended learning interventions?
- What are the pedagogical benefits of blended learning for LIS programmes in South Africa?
- What teaching methods are used in the design and facilitation of blended learning interventions?
- To what extent do LIS programmes in South Africa currently use dialogue and discussion/face-to-face type delivery in LIS education?
- To what extent do LIS programmes in South Africa currently use online learning experiences?
- Do LIS programmes in South Africa currently make use of blended learning? If yes, what blended learning interventions are used?
- What are the theoretical and practical aspects that may be used in designing effective blended learning interventions for the delivery of LIS curricula?
- What effective blended learning framework may be developed for the meaningful delivery of LIS curricula in South African universities?

Each questionnaire and interview session opened with background information about the responding participant. The background information established the characteristics of the responding institutions and ascertained whether the person who was responding to the questions was competent to do so.

The data collection proceeded in two distinct phases with a census in the first phase and purposeful sampling in the second qualitative phase. The quantitative findings were used to plan the qualitative follow-up phase. The findings from the Web survey informed the

sampling as well as the qualitative questions to be asked of participants in the interviews with LIS educators, telephone interviews with facilitators of blended learning and focus group discussions with LIS students that were exposed to blended learning interventions. Since the findings from the Web survey were intended to be followed up and explored in more depth with the interviews and focus group discussions, the research findings of the Web survey are presented first in this chapter, followed by the findings from the semi-structured interviews with LIS educators, then the findings from the semi-structured telephone interviews with facilitators of blended learning and finally the findings from the focus group discussions with LIS students exposed to blended learning interventions.

5.5.1 Presentation of findings from Web survey of LIS educators

This section presents the findings from the data that was collected from LIS educators using the Web survey (refer to Appendix A). The responses to the open-ended items in the Web survey were grouped into themes and findings are presented in tables, where possible. Quantitative findings from this instrument are captured in graphs and tables.

5.5.1.1 Number of respondents per institution and Faculty/College/School

Respondents to the Web survey were asked to indicate which faculty or college or school they were attached to in their respective higher education institutions. Respondents had to choose from the list of ten higher education institutions offering LIS education and training as well as a Faculty/College/School list provided (refer to Appendix A). Table 5.2 indicates that the study received participation from nine of the ten higher education institutions in South Africa offering LIS education and training. No response was forthcoming from the Walter Sisulu University despite several attempts. There was no consistency with regard to the broader academic unit in higher education institutions offering LIS education and training. For example, while one institution used the term ‘college’, another used the term ‘school’. However, the term ‘faculty’ was most widely used (in eight out of the 10 higher education institutions that offered LIS education and training).

Table 5.2

[N=37]

Number of respondents per institution and Faculty/College/School

Name of institution	Faculty/College/School	Number of respondents	Percentage
University of South Africa (UNISA)	College of Human Sciences	12	32%
University of Zululand	Faculty of Arts	6	16%
Durban University of Technology	Faculty of Accounting and Informatics	3	8%
University of Fort Hare	School of Social Sciences	3	8%
University of Kwazulu-Natal	Faculty of Humanities, Development and Social Sciences	3	8%
University of Pretoria	Faculty of Engineering, Built Environment and Information Technology	3	8%
University of the Western Cape	Faculty of Arts	3	8%
University of Cape Town	Faculty of Humanities	2	5%
University of Limpopo	Faculty of Humanities	2	5%
Walter Sisulu University	Faculty of Education	0	0%

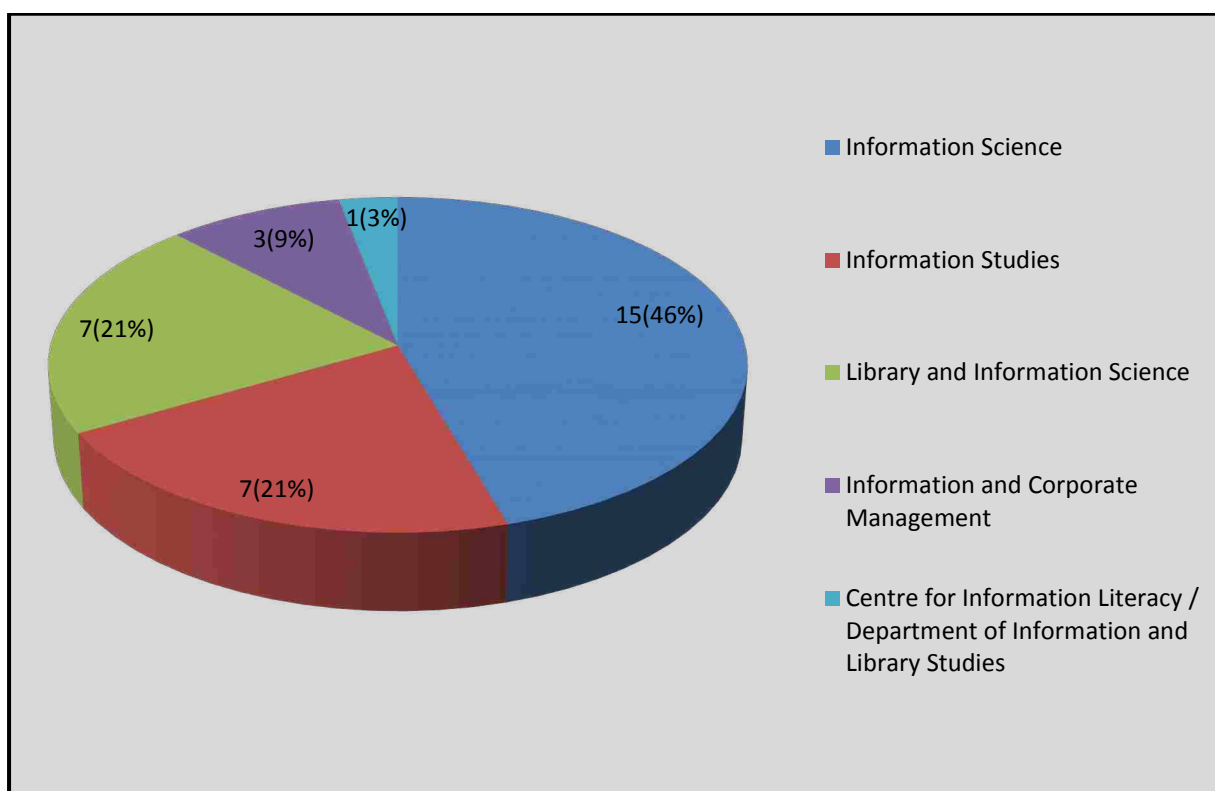
5.5.1.2 Departments

Respondents were asked to indicate the department to which they belonged. Thirty-three (33) LIS educators responded to this item while four did not. Figure 5.3 indicates that 45% of LIS educators surveyed came from a Department of Information Science. Only two of the departments retained the term 'library' in their titles. The term 'information', on the other hand, features in all of the titles.

Figure 5.2

[N=33]

Departments to which LIS educators belong



5.5.1.3 Programme(s) offered by LIS departments

LIS educators were asked to list the programme(s) in their respective departments. Twenty-five (25) of the 37 LIS educators responded to this item whilst 12 did not. Table 5.2 displays a list of the programme(s) offered by the respective departments offering LIS education and training. The programmes offered by the departments are varied in terms of their nomenclature. Instructional offerings range from short courses to doctoral studies. Only 8 (18%) of the 45 programmes offered by the nine participating institutions offering LIS education and training have the same name of programme (using the same nomenclature). Here again, as it is with the case of the name of departments, the term ‘library’ is used in 10 (22%) of the listed programmes, while 16 (36%) of the listed programmes use only the term ‘information’ and 9 (20%) use both the terms ‘library’ and ‘information’. The term ‘information studies’ is used in 11 (24%) of the listed programmes while ‘information science’ is used in 17 (38%) of the listed programmes.

Table 5.3

[N=25]

Programme(s) offered by LIS departments

Programme	Frequency
Short courses in Archives and Records Management (Beginners, Intermediate and Advanced)	1
Short courses in School Librarianship	1
Advanced Certificate in Education: School Librarianship	2
Higher Certificate in Archives and Records Management	1
Programme in Archival Studies	1
Lower Diploma in Information Sciences	1
National Diploma: Library and Information Studies	1
Higher Diploma in Information Studies	1
Bachelor of Library and Information Science	3
Baccalaureus Informationis Scientiae [BIS] (i) with specialization in Information Science (ii) with specialization in Multimedia (iii) with specialization in Multimedia (Four-year programme) (iv) with specialization in Publishing	1
Bachelor of Arts General	1
Bachelor of Arts in Information Science	2
Baccalaureus Bibliothecologiae	1
Bachelor of Technology: Library and Information Studies	2
Postgraduate Diploma in Archives and Records Management	2
Postgraduate Diploma in Library and Information Studies	3
Postgraduate Diploma in Museum and Heritage Studies	1
Postgraduate Diploma in Museology	1
Postgraduate Diploma in School Librarianship	1

Programme	Frequency
Bachelor of Arts Honours in Information Science/Studies	2
Bachelor of Library and Information Science Honours	3
Baccalaureus Informationis Scientiae Honores [BISHons] (i) with specialization in Information Science (ii) with specialization in Multimedia (iii) with specialization in Publishing	1
Honours Bachelor of Arts in Archival Science	1
Master of Arts in Information Studies	1
Master of Library and Information Studies/Science	3
Master of Philosophy in Library and Information Studies	1
Magister Informationis Scientiae (Research) [MIS] (i) with specialization in Library Science (ii) with specialization in Information Science (iii) with specialization in Multimedia (iv) with specialization in Publishing	1
Masters of Information Science in Archival Science	1
Masters in Information Technology [MIT] (Research & Coursework)	1
Master of Technology: Library and Information Studies	1
Master of Philosophy	1
Doctor Philosophiae [DPhil] (i) with specialization in Library Science (ii) with specialization in Information Science	1
Philosophiae Doctor [PhD] (i) with specialization in Publishing	1
Doctor of Literature and Philosophy in Information Science	1
Doctor of Philosophy	2
Doctor of Philosophy (Library and Information Science)	2
Doctor of Technology: Library and Information Studies	1

5.5.1.4 Designation of LIS educators

Respondents were asked to indicate their current designations. Thirty-one (31) LIS educators responded to this item while 6 did not. Table 5.4 shows a breakdown of the designations of the LIS educators. More than half of the respondents (52%) are lecturers, with nearly a quarter (23%) being at the level of Senior Lecturer. It is of concern that only 10% and 13% respectively hold the designation of Associate Professor and full Professor. This indicates seniority is currently a scarcity in the LIS academe in South Africa.

Table 5.4

[N=31]

Designation of LIS educators

Designation	Frequency	Percentage
Junior Lecturer	1	3%
Lecturer	16	52%
Senior Lecturer	7	23%
Associate Professor	3	10%
Professor	4	13%

5.5.1.5 Number of years in current position and number of years teaching experience of LIS educators

The researcher wanted to ascertain whether the number of years in their current positions and teaching experience had an impact on the use of blended learning in LIS education and training. Hence respondents were asked to indicate the number of years that they were in their current positions and the total number of years of teaching experience. Thirty-two (32) of the 37 LIS educators responded to these items while 5 did not. Table 5.5 shows the relationship between the number of years of teaching and number of years in the current position. A significant number of LIS educators surveyed (34.4%) have been teaching for more than 20 years with 5 (15.6%) remaining in their current position for more than 20 years. This together with the fact that 21.2% have been teaching for 16-20 years augurs well for the possibility of a large number of Lecturer designations reflected in Table 5.4 converting to more senior designations in the near future.

Table 5.5

[N=32]

Number of years in current position and number of years teaching experience of LIS educators

		Number of years in this position					Total	
		0-5 years	6-10 years	11-15 years	16-20 years	More than 20 years		
Total number of years teaching experience	0-5 years	Count	5	0	0	0	0	5
		% of Total	15.6%	.0%	.0%	.0%	.0%	15.6%
	6-10 years	Count	3	1	0	0	0	4
		% of Total	9.4%	3.1%	.0%	.0%	.0%	12.5%
	11-15 years	Count	3	2	0	0	0	5
		% of Total	9.4%	6.3%	.0%	.0%	.0%	15.6%
	16-20 years	Count	2	0	2	3	0	7
		% of Total	6.3%	.0%	6.3%	9.4%	.0%	21.9%
	More than 20 years	Count	2	1	1	2	5	11
		% of Total	6.3%	3.1%	3.1%	6.3%	15.6%	34.4%
	Total	Count	15	4	3	5	5	32
		% of Total	46.9%	12.5%	9.4%	15.6%	15.6%	100.0%

5.5.1.6 Academic qualifications of LIS educators

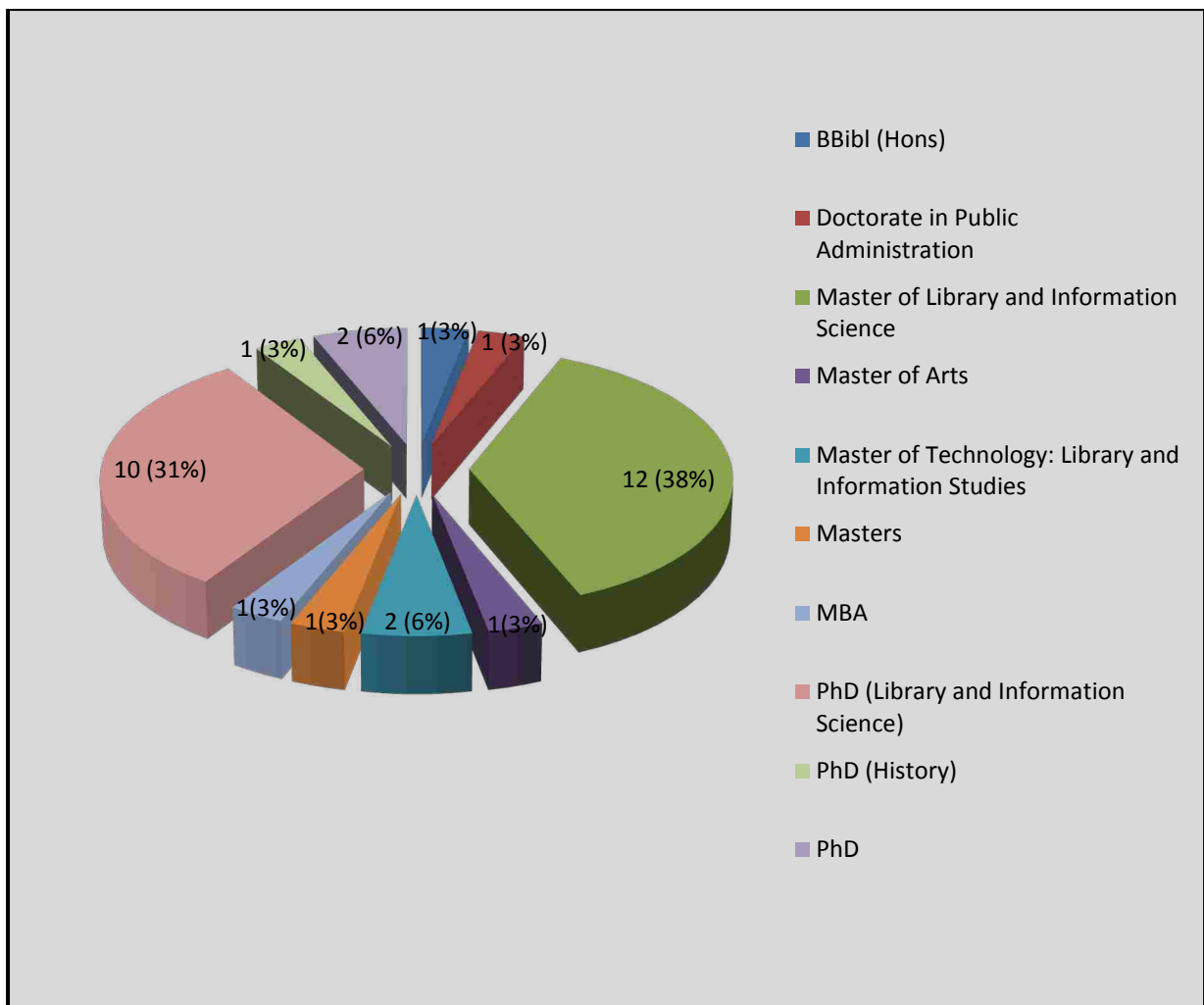
To ascertain the qualifications of the LIS educators, respondents were asked to state their highest academic qualification. Thirty-two (32) LIS educators responded to this item while five did not. The qualifications were stated in varying forms, some with qualifiers and some without (despite the questionnaire providing an exemplar). The qualifications were therefore categorised as Honours Degree, Masters/Master of Technology degree and PhD/Doctorate. Qualifications with Library and/or Information Science were grouped together. Figure 5.3 indicates, not surprisingly, that a significant number of LIS educators surveyed (38%) possess a Masters in Library and Information Science (Masters from a traditional university) and 2 (6%) have a Master of Technology Degree in Library and Information Studies (from a

university of technology). Three (9%) possess a Masters in disciplines other than LIS. It is also noteworthy that a significant 31% of LIS educators have their PhDs in the LIS field of study, revealing, encouragingly, a healthy state of the LIS academe in South Africa.

Figure 5.3

[N=32]

Academic qualifications of LIS educators



5.5.1.7 Subjects taught by LIS educators and level of subjects taught

Respondents were asked to list the subjects that they taught as well as the level at which the subjects were taught. The level indicates the year of study, for example, level ‘2’ denotes the second year of study towards a three-year Diploma in Library and Information studies or level ‘4’ denotes the fourth year of study towards a four-year bachelor degree in Library and Information Science. Thirty three (33) LIS educators responded to this item and four did not.

Table 5.6 shows a comprehensive list of 116 subjects taught by the LIS educators surveyed. While every attempt was made to collate entries under single subject titles, this was not always possible due to variation in subject titles between institutions. It would appear that the subjects being taught by LIS educators surveyed are scattered across from level 1 (first year of programme) up to level 5 (coursework Masters) and also including supervision of postgraduate research, an additional aspect of their work.

Table 5.6

List of subjects taught by LIS educators

[N=33]

Subject	Level
ACE Cataloguing	1
ACE Information Sources	1
ACE School Library Development and Management	1
Advanced Classification	4
Advanced Information Organisation and Retrieval	4
Archival Arrangement	4
Archives and Development	4
Assembling and Upgrading Computers	2
Automation of Information Centres	4
Basic Cataloguing	2
Basic Electronics	2
Bibliographic Control, Basic Descriptive Cataloguing and Classification	2
Bibliographic Description	4
Bibliographies and Reference Techniques	4
Bibliography	4
Cataloguing	3
Classification	3
Collection Development	4
Collection Development	3
Comparative and International Professional Practice	3
Computer Literacy	2
Computer Literacy for PGDSL	4
Computer Literacy I	1
Computerized Cataloguing	4
Computerized Cataloguing	3
Databases	3
Digital Libraries	3
Document Studies	4

Subject	Level
Economics and Politics of Information	2
Education and Training (Masters coursework)	5
Electronic Publishing	1
Exploring Information Skills	3
Fundamentals of LIS Management	4
Historical Librarianship	4
History of Libraries	4
History of Libraries and Other Information Agencies	1
Human Studies	1
ICTs and School Library	4
Indigenous Knowledge and Knowledge Management	4
Indexing	3
Indexing	4
Indexing and Abstracting	2
Indexing and Thesaurus Construction	5
Indigenous Knowledge	2
Indigenous Knowledge and Communication	2
Information and Communication Technology	1
Information Communication	4
Information Delivery Systems	4
Information Ethics	2
Information Ethics	4
Information in a Socio-political context	3
Information Literacy	1
Information Management and communication	2
Information Management	4
Information Organisation and Retrieval	4
Information Processing and Retrieval	4
Information Representation and Organisation	2
Information Resources Management	2
Information Resources Management	3
Information Resources Management	4
Information Retrieval	3
Information Retrieval	1
Information Searching and Retrieval	4
Information Seeking and Retrieval	2
Information Seeking Behaviour	2
Information Society: Trends and Issues	2
Information Sources	2
Information Studies	4
Information Systems	2
Information Systems	4
Information Systems and Networks	4

Subject	Level
Information Systems and Information Management	4
Information Users and Use	1
Introduction to Information Science	1
Learning How to Provide Reference Services	2
Library and Information Practice	1
Library and Information Practice	2
Library and Information Practice	3
Library and Information Practice	4
Library and Information Professional Practice	3
Literacy Studies	4
Literature Studies	2
Management of Libraries and Information Centres/Services	3
Management Studies	4
Multimedia	2
Network Centre Management	1
Networks and Networking	3
Organisational Behaviour in Libraries and Information Services	4
Performance Measurement	4
Philosophical Issues in LIS	4
Political Economy of Information	3
Portfolio Work	3
Practical Cataloguing	3
Practical Classification and Indexing	2
Project Management	5
Proposal Development	5
Records Management	4
Reference Sources	1
Rendering a Library Service	4
Research Article Writing	Postgraduate
Research in Information Science	3
Research in the Social sciences	4
Research Methodology	4
Research supervision	Postgraduate
School Library Management	4
Searching and Retrieval	1
Socio-political Aspects of Information in a Global Context	3
Strategic Information Management	4
Subject Analysis	4
Theories of Libraries and Information Studies	4
User Studies - Information Behaviour	2
User Studies and Reading	2
Using the Internet as Reference Tool	1
Utilising Electronic Library Systems and Services	2

Subject	Level
Web Page Design and Construction	4
Web Programming Multimedia	4

5.5.1.8 Pedagogical issues in blending learning

Responses to pedagogic issues pertaining to blended learning that were probed in this study are presented in this section.

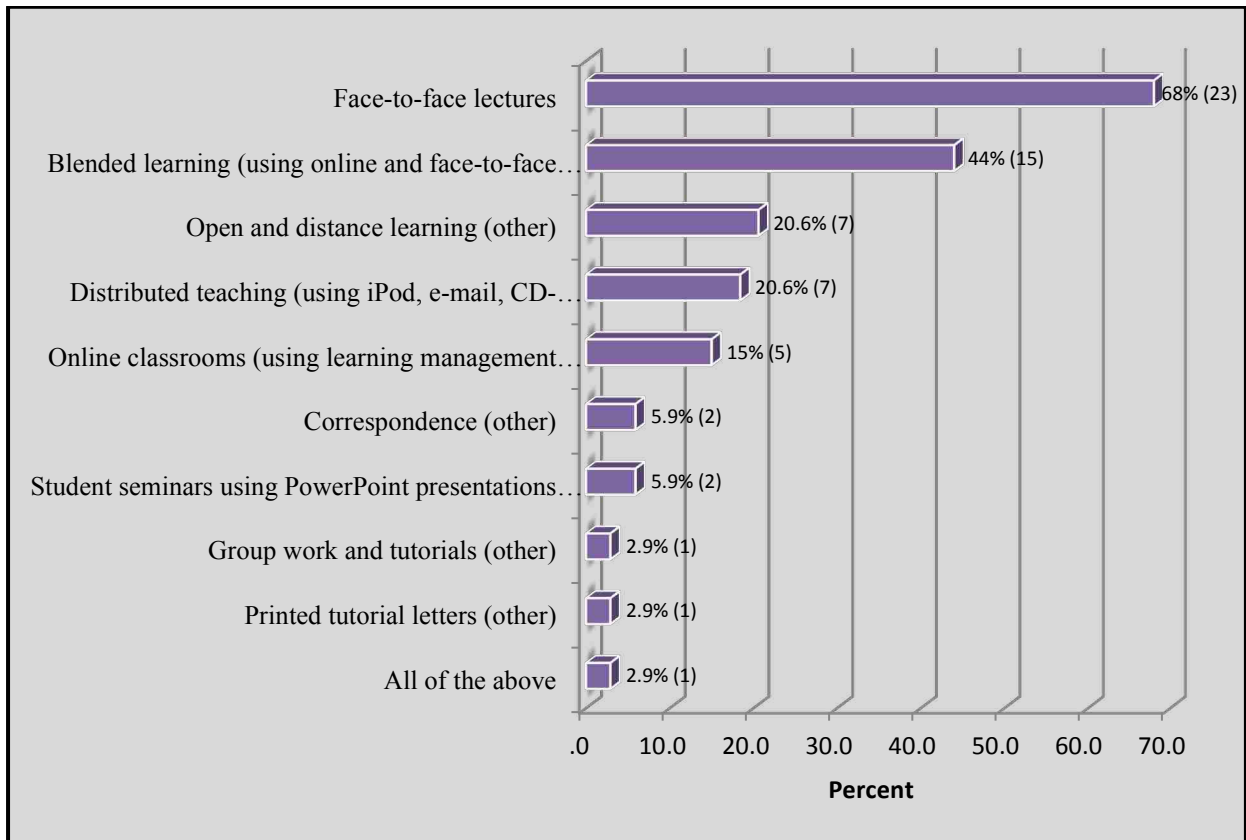
5.5.1.8.1 Teaching methods used by LIS educators

LIS educators were provided with a list of options (refer to Item 10 of Appendix A) and asked to indicate the teaching methods used. Respondents could choose more than one option. Thirty-four (34) of the 37 LIS educators responded to this item. Figure 5.4 indicates that the most common teaching methods used by the LIS educators surveyed were face-to-face lectures (68%). Only one LIS educator indicated incorporating all four teaching methods listed in this item. Respondents were provided with an ‘other’ option where they could specify other teaching methods used. The ‘other’ specified included open and distance learning, student seminars using PowerPoint presentations, correspondence, printed tutorial letters, and group work and tutorial.

Figure 5.4

[N=34]

Teaching methods used by LIS educators



5.5.1.8.2 Modes of delivery

This section presents findings relating to the two primary modes of delivery, namely, face-to-face and online.

5.5.1.8.2.1 Face-to-face

As evident in Figure 5.4, Face-to-face lectures (68%) appears to be the most common method of teaching among LIS educators surveyed. Student seminars using PowerPoint presentations (5.9%) as well as Group work and tutorials (2.9%) are also considered as face-to-face modes of delivery.

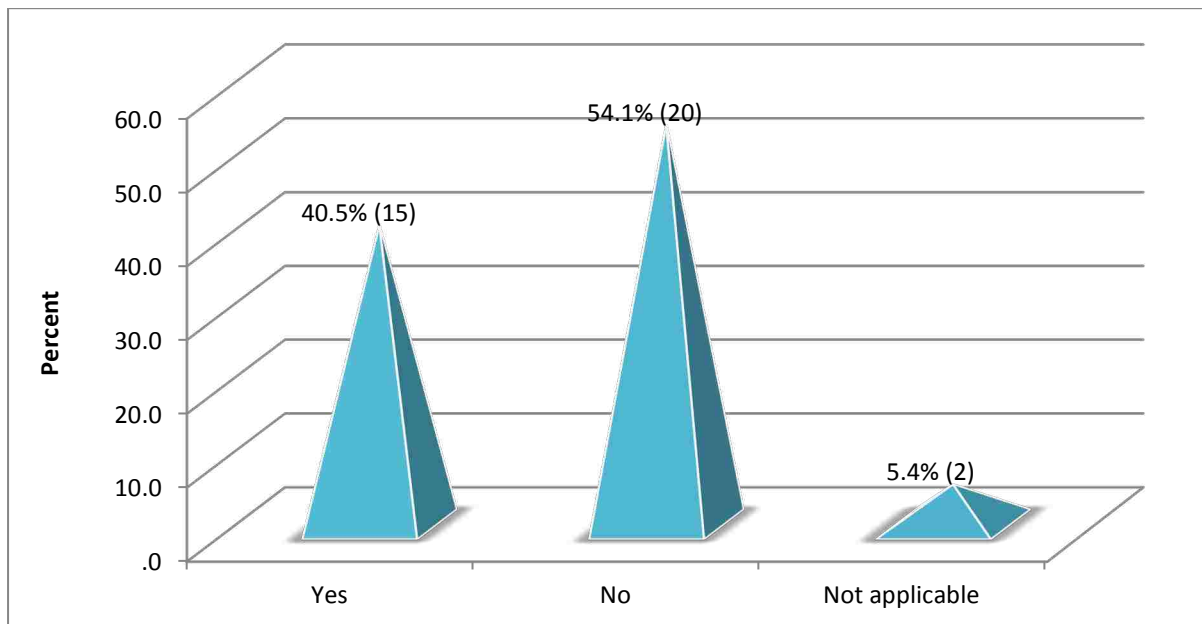
5.5.1.8.2.2 Online delivery using Learning Management Systems (LMS)

Respondents were asked if they had used any LMSs in their teaching. All 37 LIS educators responded to this item. Figure 5.5 indicates that more than half of the respondents (54.1%) had not used any LMS while 15 (40.5%) had used an LMS. Two respondents (5.4%) indicated that this item was not applicable to them.

Figure 5.5

[N=37]

Online delivery using Learning Management Systems (LMS)

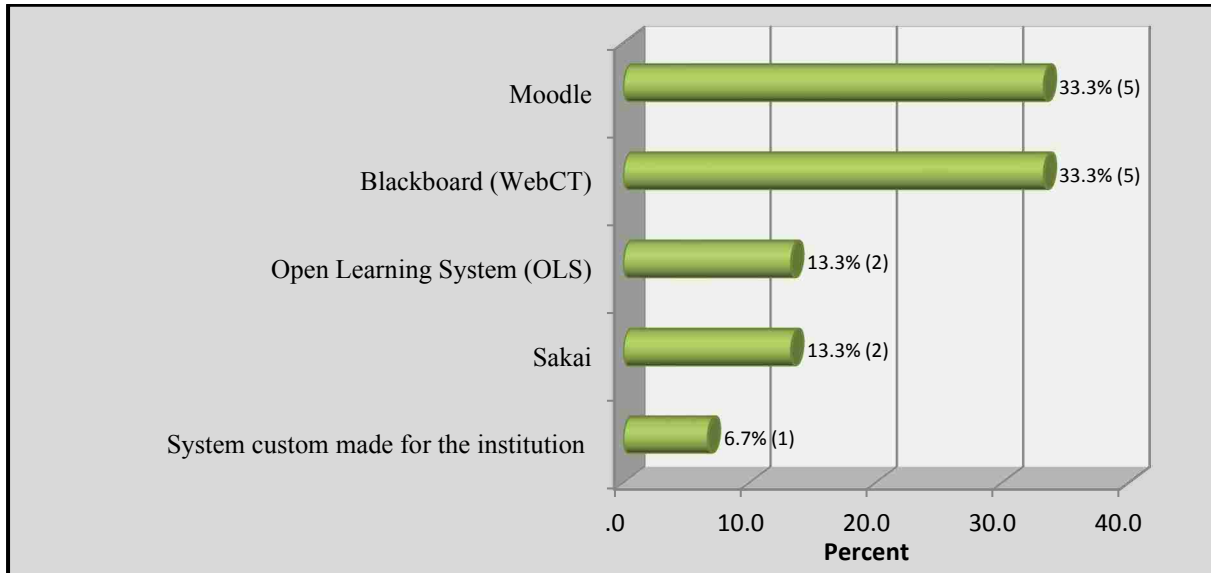


The respondents who indicated in the Web survey (refer to Appendix A) that they had used an LMS were asked to name the LMS that they used. As indicated in Figure 5.5, 15 LIS educators indicated that they used LMSs. The two most commonly used LMSs were Moodle (33.3%) and Blackboard (WebCT) (33.3%). One respondent (6.7%) indicated that he/she used an LMS that was custom made for the institution (refer to Figure 5.6).

Figure 5.6

[N=15]

LMS used by LIS educators



5.5.1.8.2.2.1 Advantages of using LMS

The 15 respondents who indicated that they had used an LMS were asked to stipulate the advantages of using it. The responses listed in Table 5.7 show that, for the respondents, the biggest advantage of using an LMS is easier communication with students and distribution of course material to large groups of students. A significant percentage of respondents (20%) also cited the open source nature of the LMS software used as well as its ability to facilitate collaborative work as advantages. Although the percentage value of some of the individual comments is low they are nevertheless worth noting.

Table 5.7

[N=15]

Advantages of using LMS

Advantages	Frequency	Percent
Easier communication with students and distribution of information especially to large groups of students	5	33.3%
The LMS is open source; it facilitates collaborative work and is great for constructivist teaching	3	20%
Direct interaction and instant connection with students and hence faster turnaround response in a distance learning environment	2	13.3%
Very convenient for creating access for students off campus	1	6.7%
The quizzes created in Moodle can be marked instantaneously, providing feedback for the student	1	6.7%
The material is accessible to students in their own time	1	6.7%
Quick, saves time and allows students to go back to tasks if not clear	1	6.7%
Large Open Source community support base	1	6.7%
Keeps the attention of students	1	6.7%
It is specifically developed to suit ICT and administrative departments	1	6.7%
Easy to comment on work done by each individual student	1	6.7%
Depth of study and amount of information is much more than in face-to-face classes	1	6.7%

5.5.1.8.2.2.2 Disadvantages of using LMS

The 15 respondents who had indicated that they had used an LMS were also asked to comment on the disadvantages of using the particular LMS. Table 5.8 lists some very legitimate disadvantages which need to be given serious consideration.

Table 5.8

[N=15]

Disadvantages of using LMS

Disadvantages	Frequency	Percent
Lack of computer skills of students	2	13.3%
Students stop attending class and just download everything from the system as they think this is a replacement for class attendance	2	13.3%
Impoverished students do not have money to print material off the system	1	6.7%
Poor IT infrastructure	1	6.7%
Lack of hardware maintenance	1	6.7%
Insufficient bandwidth	1	6.7%
Lack of engagement between lecturer and students and tendency for student to do minimum amount of work	1	6.7%
Not all students have access to computers with online facilities.	1	6.7%
Not possible when there is power blackout	1	6.7%
Not very pliable. You have to go with what is provided within a set system.	1	6.7%
There needs to be consensus from the majority of the users of the LMS for new features to be implemented	1	6.7%
It is not possible to customize the grade book and some other settings on the LMS	1	6.7%
Unavailable when server or Internet is down	1	6.7%

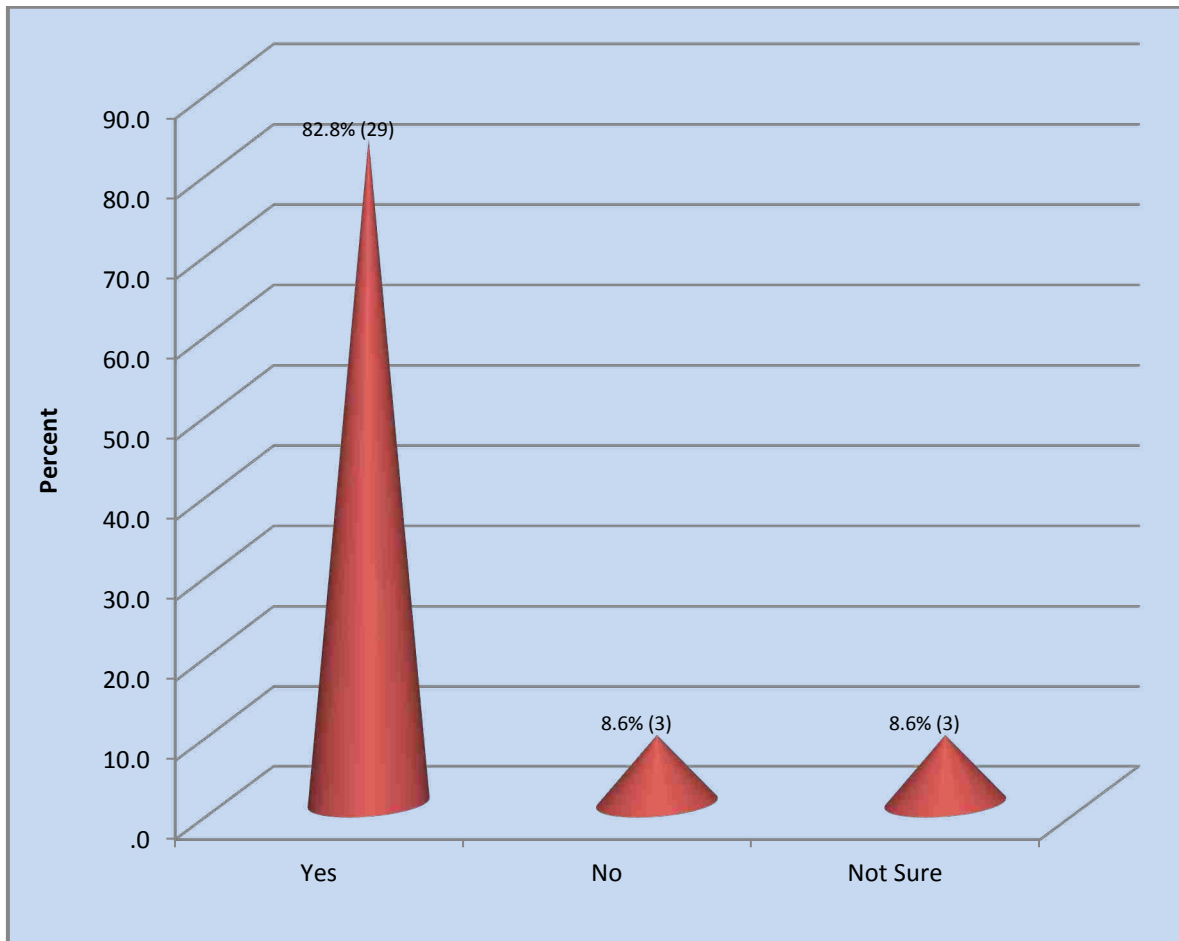
5.5.1.8.3 Educational support for LIS educators

LIS educators were asked if their respective institutions had a unit which provides educational support for teaching staff. Thirty-five (35) LIS educators responded to this item. Figure 5.7 captures that a majority of the LIS educators, 29 (82.8%), surveyed have such educational support at their respective institutions while three (8.6%) do not. Three (8.6%) provided a 'not sure' response.

Figure 5.7

[N=35]

Educational support for LIS educators



5.5.1.8.3.1 Kind of support provided to teaching staff

Respondents who indicated that they received support for teaching from their respective institutions were required to list the kind of support that they received. Only 24 of the 29 LIS educators who indicated that they received educational support responded to this item. Table 5.9 illustrates that most support (46%) that LIS educators received was in the form of workshops and seminars on teaching and learning.

Table 5.9

[N=24]

Kind of support provided to teaching staff

Kind of support	Frequency	Percentage
Provision of workshops and seminars on LMS and other Web-based teaching and learning, teaching methodologies, supervision, etc.	11	46%
With assessment and moderation	5	21%
Providing a separate Centre for Educational Technology	4	17%
Advice on using online teaching tools	3	12.5%
Providing technological support	3	12.5%
With design and development of learning material	2	8.3%
With writing of study guides	2	8.3%
Support in most requirements needed for teaching and learning	2	8.3%
Academic development (e.g. providing induction to the new academic staff)	2	8.3%
With evaluation of modules	1	4.2%
With improvement of quality of delivery	1	4.2%
With preparing online distance education courses	1	4.2%
Providing skills training	1	4.2%
Providing study guide development assistance	1	4.2%
With teaching portfolio preparation	1	4.2%

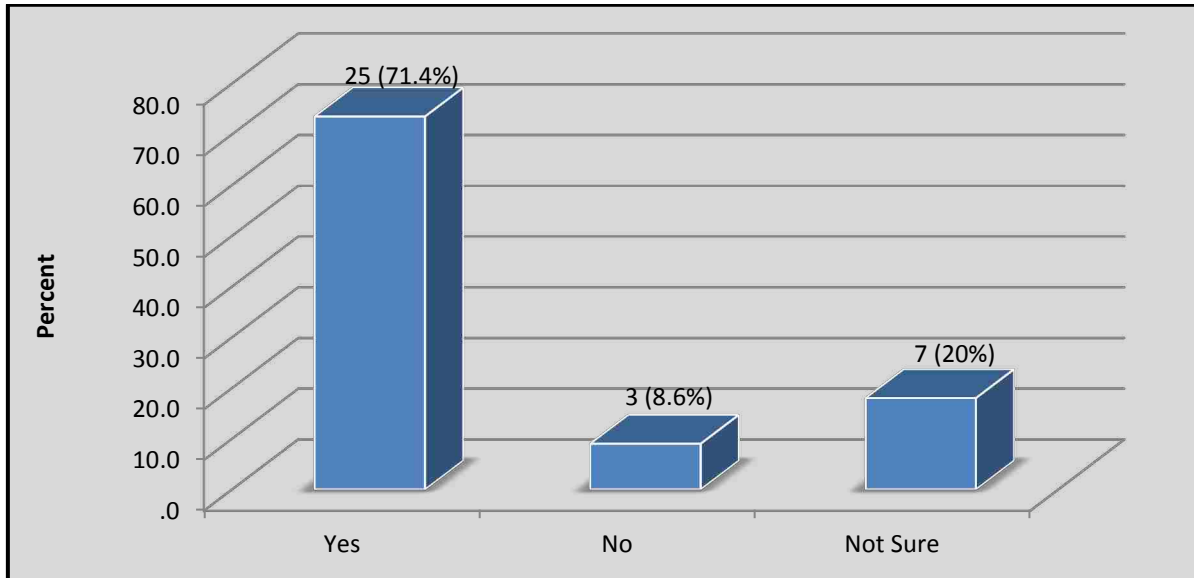
5.5.1.8.3.2 Units for developing of technology-assisted learning systems

LIS educators were asked if there was a unit at their institutions that assisted in developing technology-assisted learning systems. Thirty-five (35) responded to this item. It is encouraging to note in Figure 5.8 that the majority of the LIS educators (25 or 71.4%) indicated that their institutions had units that assisted in developing technology-assisted learning systems. Only three (8.6%) LIS educators indicated that they did not have such units, while seven (20%) were not sure.

Figure 5.8

[N=35]

Units for developing technology-assisted learning systems



5.5.1.8.3.2.1 Names of units that assist in developing technology-assisted learning systems

Respondents who indicated that there were units that assisted in developing technology-assisted learning systems at their institutions were asked to name those units. Twenty-one (21) of the 25 LIS educators responded to this item. Table 5.10 indicates that the most popular name was ‘Directorate for Curriculum and Learner Development’ (these respondents most likely came from the same institution). A popular response was ODL (Online Distance Learning) working in collaboration with the institution’s ICT unit. Another LIS educator indicated a similar situation of the E-Learning unit working in conjunction with ICS (Information and Communication Services).

Table 5.10

[N=21]

Names of units that assisted in developing technology-assisted learning systems

Name of Unit	Frequency	Percentage
Directorate for Curriculum and Learner Development	4	19%
Online Distance Learning (ODL) in combination with Information and Communication Technology (ICT)	4	19%
Centre for Educational Technology	2	9.5%
E-Learning Unit	2	9.5%
Centre for Excellence in Teaching and Learning (CELT)	1	4.8%
E-Learning in conjunction with ICS (Information Communication Services)	1	4.8%
Education Innovation	1	4.8%
Educational Technology	1	4.8%
ICT Academic	1	4.8%
ICT and Media and Information Studies	1	4.8%
Information Technology Division	1	4.8%
Teaching and Learning Centre	1	4.8%
Teaching Innovation	1	4.8%

5.5.1.8.3.3 Technology-assisted teaching/learning interventions developed by units

Respondents who indicated that there were units that assisted in developing technology-assisted learning systems at their institutions were also asked to indicate the technology-assisted teaching or learning interventions that were developed by these units. Twenty-one (21) of the 25 LIS educators responded to this item. Encouragingly, respondents indicated, as reflected in Table 5.11, that these units assisted in training academics to design teaching and learning material for online classrooms (28.6%), to develop blended learning interventions

(23.8%), and assisted with curriculum development using Web-based teaching and learning (19%).

Table 5.11

[N=21]

Technology-assisted teaching/learning interventions developed by units

Teaching/Learning intervention	Frequency	Percent
Training academics to design teaching and learning material for online classrooms	6	28.6%
Developing blended learning interventions	5	23.8%
Assisting with curriculum development using Web-based teaching and learning	4	19%
Maintenance of a wide range of software applications in the LANs e.g. SPSS, Nvivo, PowerPoint, Turnitin, etc.	2	9.5%
Conducting research seminars and workshops on the value of online education	2	9.5%
Assistance with online marking	1	4.8%
Back-up with technology in the lecture venues	1	4.8%

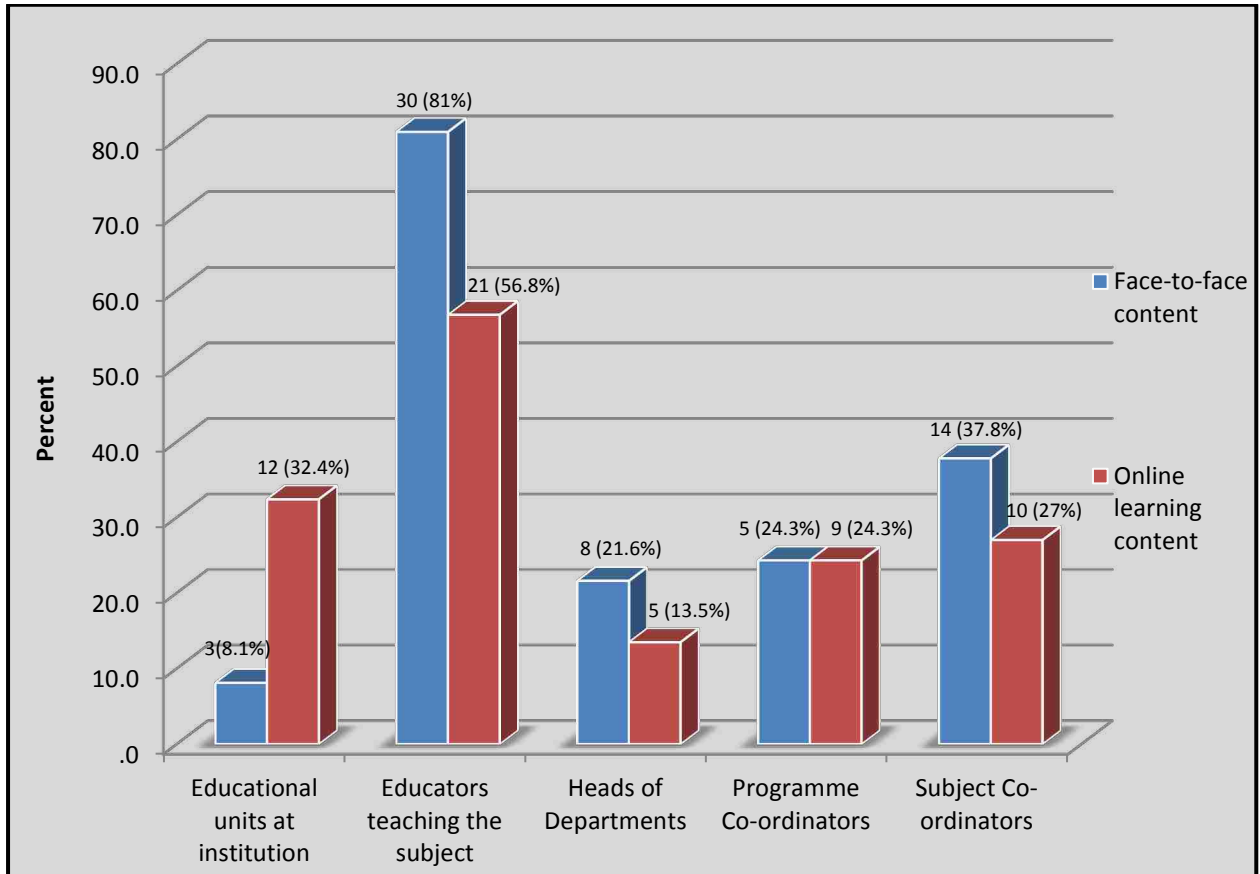
5.5.1.8.3.4 Development of content for face-to-face and online delivery

Respondents were asked who had primary responsibility for developing content for face-to-face delivery and for online learning at their respective institutions. Respondents could select more than one option. All 37 LIS educators responded to these items. Figure 5.9 illustrates that academic staff (Educators teaching the subject (81%), Heads of Departments (21.6%), Programme co-ordinators (24.3%) and Subject co-ordinators (37.8%)) are responsible for developing subject content for face-to-face delivery. Interestingly, academics are still largely responsible for development of online learning content, but not surprisingly and logically so, educational units at institutions providing educational support to teaching staff seem to be playing a significant role (32.4%) in this new area of online delivery.

Figure 5.9

[N=37]

Development of content for face-to-face and online delivery



5.5.1.8.3.5 Facilities/equipment available for teaching and learning

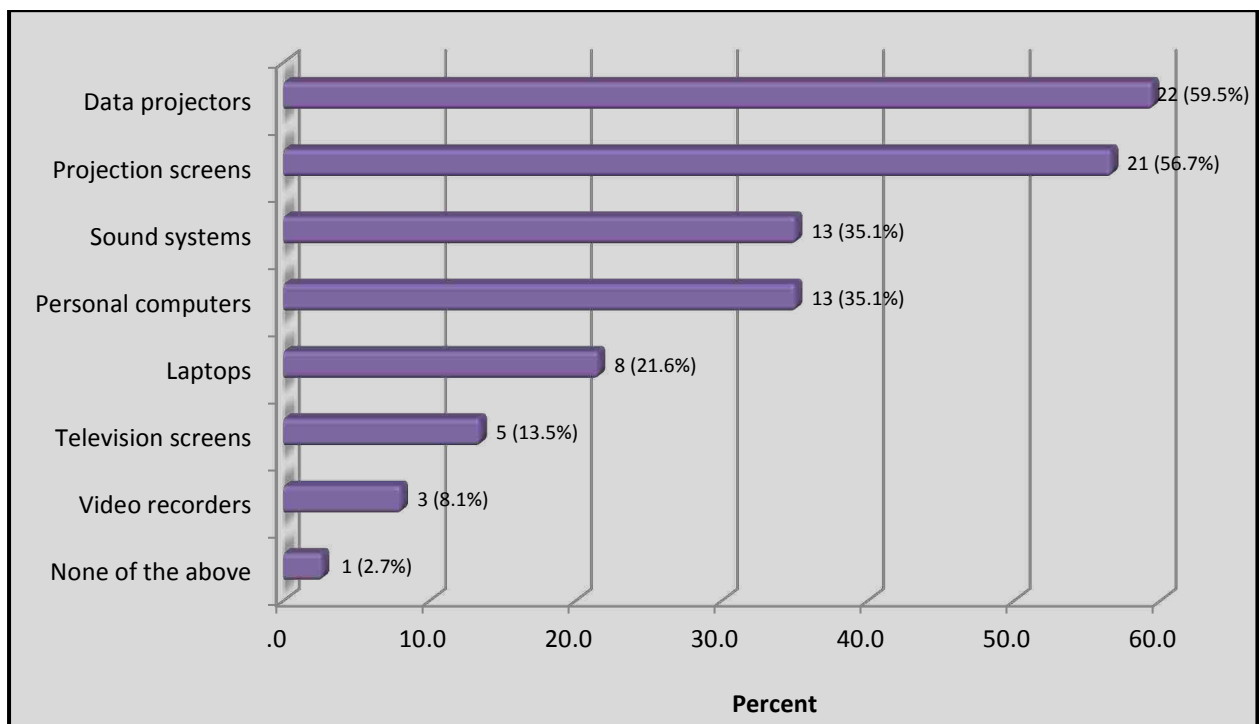
Respondents were asked (Item 24 of Appendix A) to select from a list of facilities/equipment that which are available in their lecture venues. More than one option could be selected. All 37 LIS educators responded to this item. Figure 5.10 captures these findings. Data projectors (59.5%) seem to be widely available and the obvious accompanying apparatus (projection screens) (56%) seem to significantly available as well. It would appear that those facilities which are used with the more portable types of devices (e.g. laptops) are more readily available. A little more than a third (35.1%) indicated that personal computers were available in the lecture rooms. OHPs, blackboards and whiteboards were specified as 'other' equipment that were available in the lecture venues for educators to use. Some indicated that portable

equipment needed to be requested in advance since they were part of a pool of equipment that was shared.

Figure 5.10

[N=37]

Facilities/equipment for teaching and learning



5.5.1.8.3.6 Technical support for LIS educators from the institution

Respondents were asked to indicate the level of technical support and technical support training they received from their respective institutions. Thirty-three (33) of the 37 LIS educators responded to this item. Figure 5.11 illustrates that while 33.3% of LIS educators surveyed indicated that technical support and technical training provided by their respective institutions were satisfactory, an encouragingly significant 48.5% reported this support to be either good or very good. This augurs well for LIS teaching and learning using the latest technologies available.

Figure 5.11

[N=33]

Technical support for LIS educators from the institution



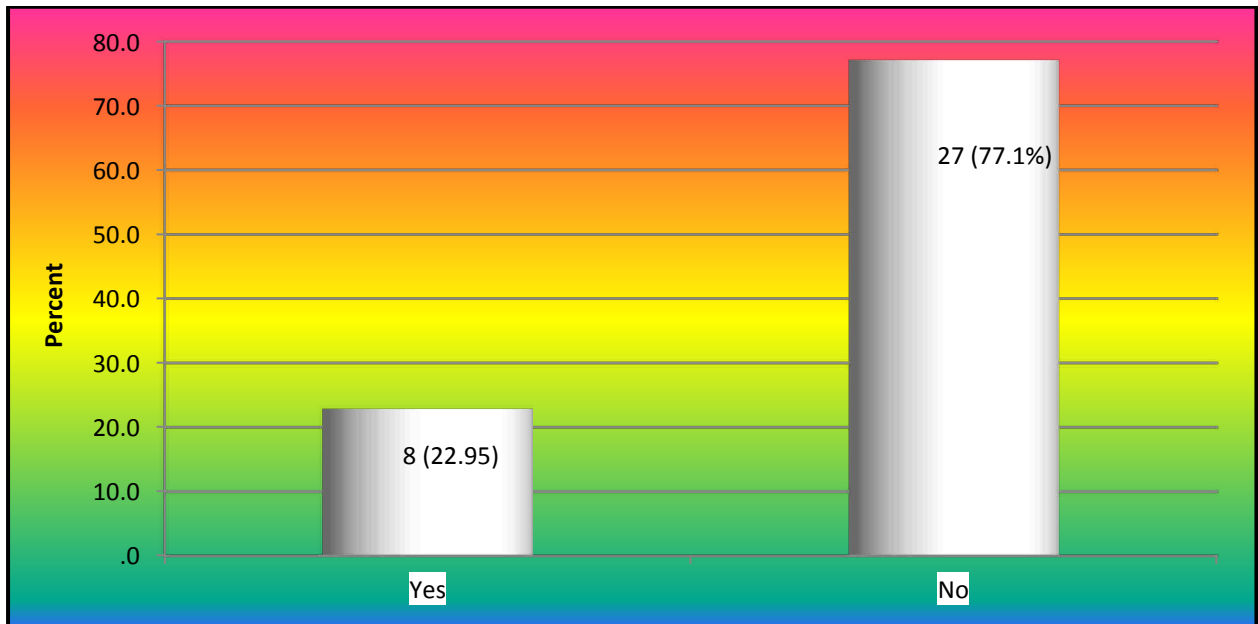
5.5.1.8.3.7 Power cuts at institutions

Power cuts would hamper the ability to teach using technology and hence respondents were asked if they often experienced power cuts at their institutions. It is with relief that one observes in Figure 5.12 that of the 35 LIS educators who responded to this question, a majority 27 (77.1%) did not experience power cuts often. However, a figure of almost 23% of educators experiencing frequent power cuts is still a matter for concern especially with regard to online aspects of blended learning.

Figure 5.12

[N=35]

Power cuts at institutions



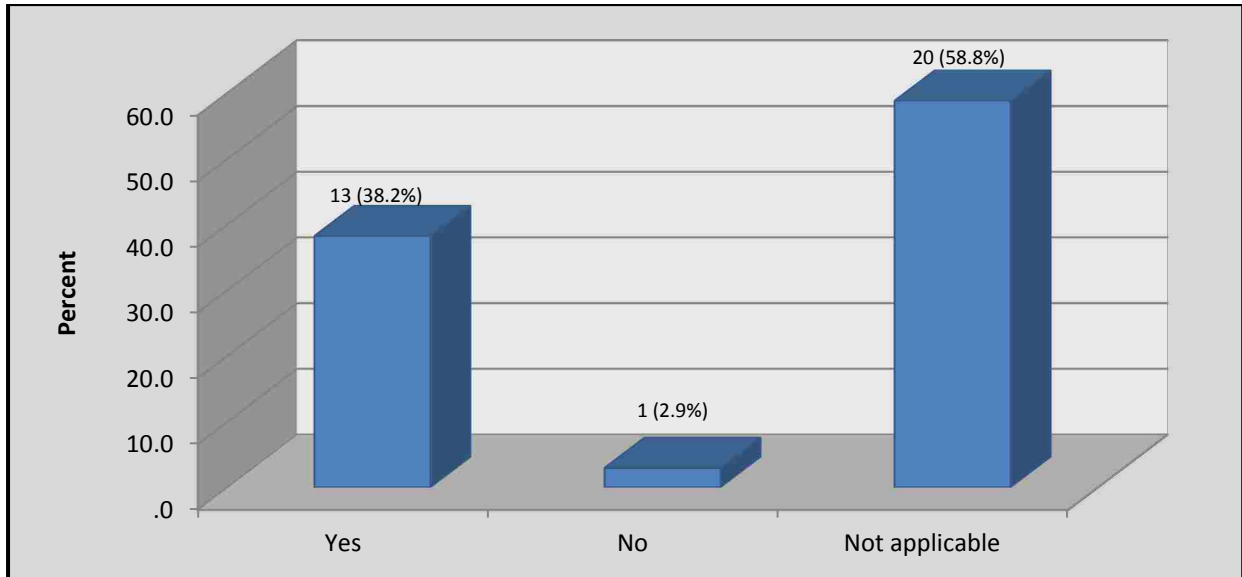
5.5.1.8.4 Use of technology-assisted teaching and learning

In order to ascertain whether LIS educators who were not using technology-assisted teaching and learning would be willing to embrace using technology in their teaching and learning, respondents were asked if they would consider using it in the future. Thirty-four (34) of the 37 LIS educators responded to this item. Figure 5.13 illustrates that 13 respondents (38.2%) indicated that they would consider using technology-assisted teaching. The fact that more than half (58.8%) of the LIS educators surveyed indicated 'not applicable' responses, has a positive implication in that these LIS educators are already engaged in technology-assisted teaching and learning.

Figure 5.13

[N=34]

Considering using technology-assisted teaching



Respondents were asked to comment on wanting to or not wanting to use technology-assisted teaching and learning in the future. Table 5.12 reflects some of the responses given by the LIS educators surveyed. Although only 9 of the 34 LIS educators responded to this item, it is encouraging that 8 (88.9%) out of the 9 LIS educators are prepared to embrace technology in their teaching and learning. Only one respondent was negative about this indicating that it is unsupported by the institution.

Table 5.12

[N=9]

Reasons for wanting to use/not use technology-assisted teaching and learning

Reasons	Frequency	Percent
Would like to master all aspects of e-learning as the technological levels of students improve. IT is here to stay and as academics we need to be able to use multiple technologies to assist us with our teaching. IT would enhance the teaching and learning.	4	44.4%
It is inevitable that it will become the norm to use technology in teaching and learning. It will become easier to do so and the support structures will be increased.	3	33.3%
It would be a good thing to introduce technology in teaching so that one is able to share knowledge and experience with other educators in LIS field across the globe. LIS education is now deeply rooted in the digital environment and therefore, the traditional modes of teaching are gradually being superseded by technology to perfect different learning styles, either face-to-face or learners at a distance.	1	11.1%
It is currently unsupported.	1	11.1%

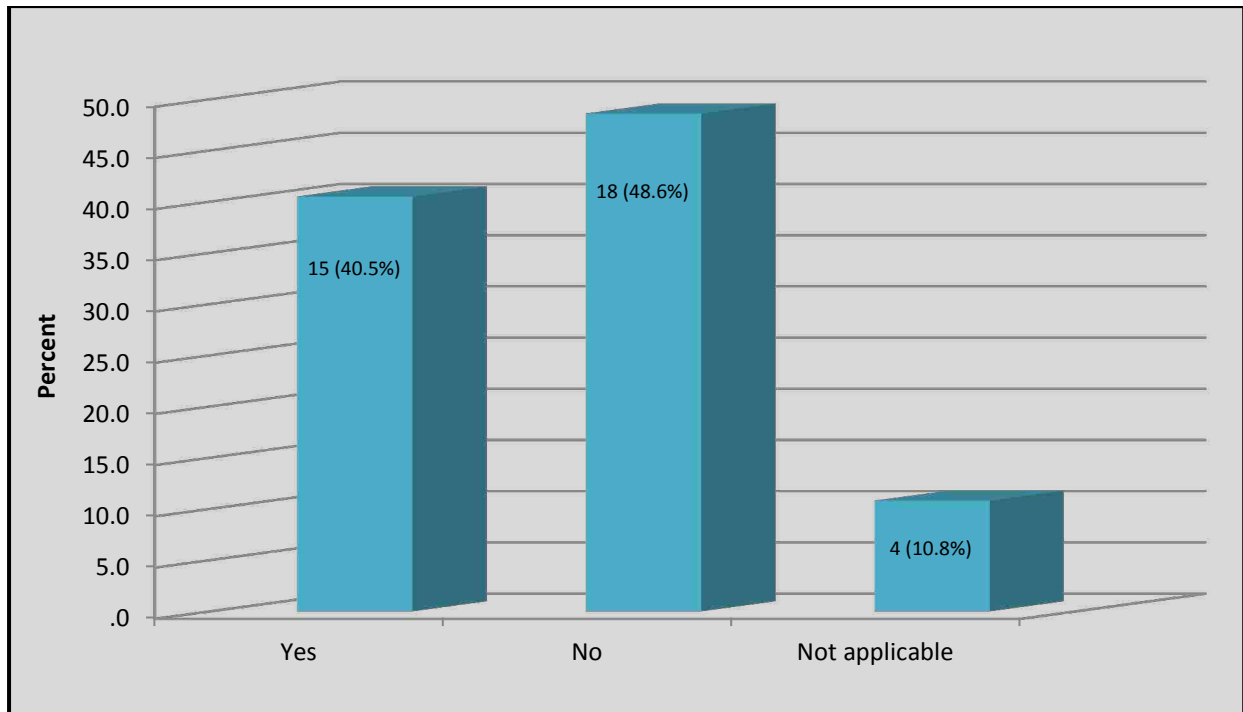
5.5.1.8.4.1 Advances in telecommunication and social networking

Since Web 2.0 and Library 2.0 technologies are prevalent in the LIS sector, respondents were asked if advances in telecommunication and social networking featuring Web 2.0 and Library 2.0 have had an impact on their teaching. All 37 LIS educators responded to this item. While 40.5% of LIS educators surveyed indicated that advances in telecommunication and social networking have had an impact on their teaching, a slightly larger percentage of 48.6% claim that advances in telecommunication and social networking have not had an impact on their teaching (refer to Figure 5.14). This ‘balancing of the scale’ picture is indicative of the gradually growing influence of telecommunications and social media in the teaching and learning space with the scale looking poised to tip in favour of the ‘yes’ side in the future.

Figure 5.14

[N=37]

Advances in telecommunication and social networking impacting on teaching



Those respondents (15) who indicated that advances in telecommunication and social networking featuring Web 2.0 and Library 2.0 have had an impact on their teaching were asked to elaborate on how this had impacted on their teaching. Of these 15 LIS educators 12 elaborated on how advances in technology had impacted on their teaching. Increased interaction with and among students (45.4%) and the use of blogs and wikis in teaching (18.2%) seem to have been the impact of telecommunication advances and social networking on teaching (refer to Table 5.13).

Table 5.13

[N=12]

How telecommunication advances and social networking has impacted on teaching

Comments	Frequency	Percent
Facilitates frequent discussions and interaction amongst one's students. Improved communication with students	5	45.4%
Use of blogs and wikis in online teaching	2	18.2%
Build on the network effect where the more users that collaborate the better e.g. Wiki for combining all relevant content from assignments	1	9.1%
Incorporating Web 2.0 technologies when delivering learning content	1	9.1%
Teaching a Web searching workshop quite regularly with a colleague and we have included a segment on social networking tools.	1	9.1%
Incorporation of more technology skills into the curriculum	1	9.1%
Social bookmarking and RSS feeds are used	1	9.1%

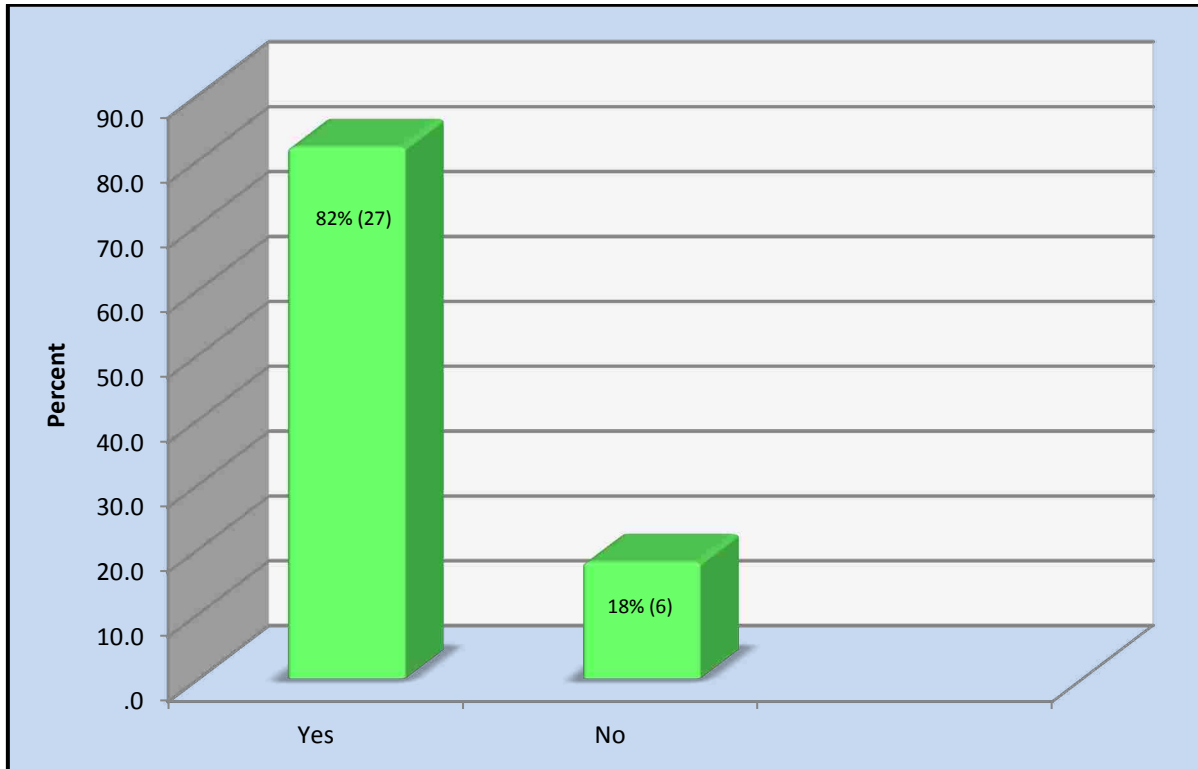
5.5.1.8.4.2 Impact of advances in technology and telecommunication on LIS curriculum

LIS educators were asked if advances in technology and telecommunications had an impact on the LIS curriculum at their institutions. Thirty-three (33) LIS educators responded to this item. A majority (82%) of the LIS surveyed indicated that advances in technology and telecommunications did indeed have an impact on the LIS curriculum at their institutions, while only 6% indicated that it did not (refer to Figure 5.15).

Figure 5.15

Impact of advances in technology and telecommunication on LIS curriculum

N= [33]



Those respondents (27) who indicated that advances in technology and telecommunications did have had an impact on the LIS curriculum at their institutions, were asked to elaborate on the extent of this impact on the LIS curriculum at their respective institutions. Twelve (44%) of the 27 LIS educators indicated that the impact has been considerable at all levels with the introduction of subjects such as ICTs, Automation, Web design, On-line searching, Digital libraries, Multi-media, Video and Sound Editing, Computer mediated communication, Social impact of ICTs, PC assembly and upgrading and Troubleshooting and Repairs being taught, while four (15%) of the LIS educators commented that there was also a change with regard to the mode of teaching and learning to a Web-based teaching and learning environment (refer to Table 5.14)

Table 5.14

N= [27]

Comments on extent of impact of advances in technology and telecommunication on LIS curriculum

Comments	Frequency	Percent
Impact has been considerable at all levels with the introduction of subjects such as ICTs, Automation, Web design, On-line searching, Digital libraries, Multi-media, Video and Sound Editing, Computer mediated communication, Social impact of ICTs, PC assembly and upgrading and Troubleshooting and Repairs being taught	12	44%
Lecturing staff are embracing Web-based teaching and learning	4	15%
Improves information dissemination and communication between lecturers and students	3	11%
Change of curricula and constant updating of content of individual modules.	2	7%
Definitely, especially due to the nature of the subject field such as online cataloguing and classification skills; archival document management	2	7%
Our institutions are currently focusing on the traditional aspects of library and information science. With the advent of information technology in response to the digital environment, our curriculum is now falling short of what the employers' require in this new era. It is apparent then that we need to review our present curricula in order to produce relevant workforce	2	7%
Need for more hands-on training with the latest software, hardware etc. Students have to have hands-on experience as they are expected to undertake practicum at level four	1	4%
More students are enrolling for both the undergraduate and postgraduate programmes	1	4%

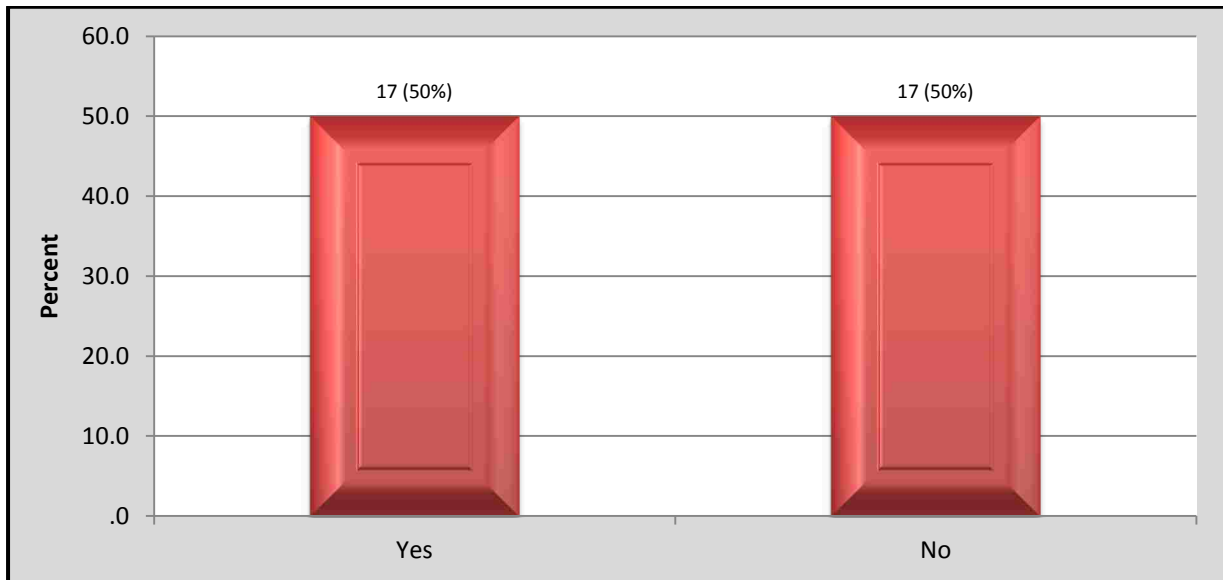
5.5.1.9 Learning styles

To ascertain whether LIS educators considered the learning styles of their students, respondents were asked if they took into consideration the different learning styles of students when preparing instructional material for their subjects. Thirty-four (34) of the 37 LIS educators responded to this item. Half of the LIS educators surveyed indicated that they did take students' learning styles into consideration, whilst the other half did not (refer to Figure 5.16).

Figure 5.16

[N=34]

Consideration of learning styles



5.5.1.9.1 Learning style instruments

Those respondents (17) who indicated that they took into consideration the different learning styles of students when preparing instructional material for their subjects, were asked to choose from a list provided (refer to Item 36 of Appendix A) the learning style instrument/s that they use to ascertain the learning styles of students. They could select more than one option from the list provided or specify the ‘other’ option. Of the 17 respondents 15 responded to this item. Table 5.15 reflects the learning style instruments used by the LIS educators surveyed. The learning style instrument used more often than any other, seems to be the Online Self-scoring Questionnaires (selected by four of the 15 respondents). Seven (46.7%) chose the ‘other’ option in which they specified the learning style instruments used. Of the seven ‘other’ responses, three indicated that establishing the learning styles of the students belonged to the Directorate: Curriculum and Learning Development.

Table 5.15

[N=15]

Learning style instruments

Learning style inventory	Frequency	Percent
Online Self-scoring Questionnaires	4	26.7%
Other: Determining students' learning styles is the responsibility of Directorate: Curriculum and Learning Development	3	20%
Atlas: Learning Strategies (Learning Style)	1	6.6%
Index to Learning Styles	1	6.6%
Learning Profile Test	1	6.6%
Learning Style Inventory (LSI)	1	6.6%
Other: One-on-one interviews	1	6.6%
Other: Asking students in class to explain personally their learning styles (as part of ice-breaker)	1	6.6%
Other: Determining student's learning styles from their reflections	1	6.6%
Other: Herrmann Brain Dominance Instrument (HBDI)	1	6.6%
Fleming's VARK Learning Style Test	0	0
Jackson's Learning Styles Profiler (LSP)	0	0

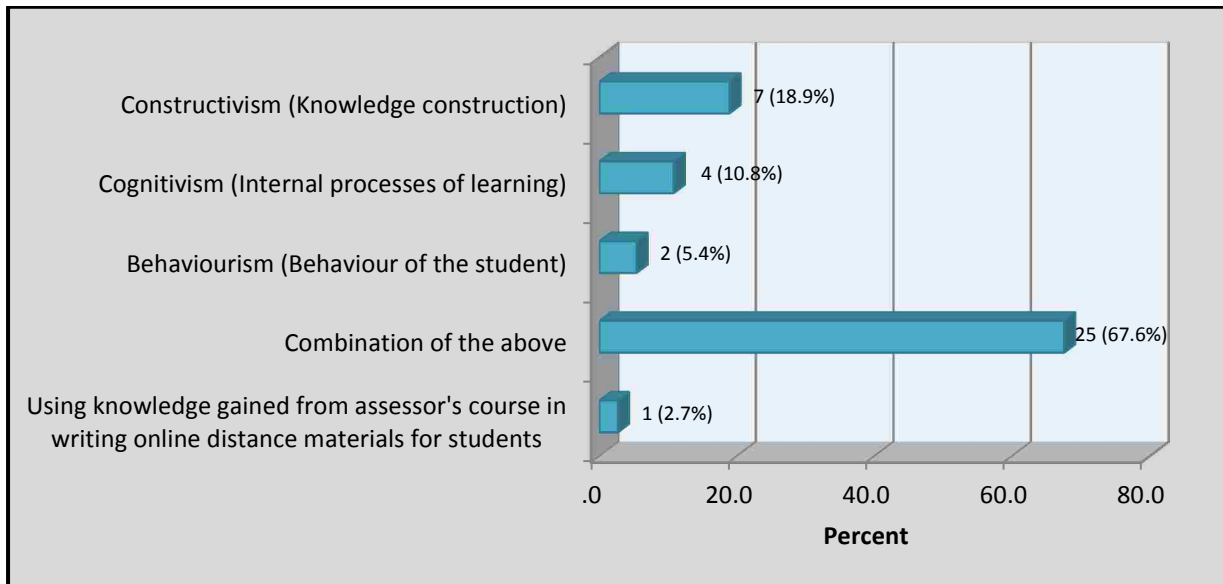
5.5.1.10 Learning theories used by LIS educators

Respondents were asked to identify the learning theories (from a list provided – refer to Item 37 of Appendix A) they used in their teaching. They could select more than one option. All 37 LIS educators responded to this item. Figure 5.17 illustrates that most LIS educators (67.6%) used a combination of learning theories. One respondent selected the 'other' option and specified as follows: Used the knowledge gained from an assessor's course in writing online distance materials for students.

Figure 5.17

[N=37]

Learning theories used by LIS educators



5.5.1.10.1 Value of incorporating a particular or combination of learning theory/ies in teaching

LIS educators were requested to comment on the value they found in incorporating a particular or a combination of learning theory/ies in their teaching. Twenty-three (23) of the 37 LIS educators who were surveyed responded to this item. The comments are captured in Table 5.16 which shows addressing student diversity by using a combination of learning theories, as having the most value. Although the frequency percentage of the other values cited by the LIS educators surveyed are low, they are worthy of consideration.

Table 5.16

[N=23]

Value of incorporating a particular or combination of learning theory/ies in teaching

Value of incorporating a particular or combination of learning theory/ies	Frequency	Percent
The diversity of students can be addressed by using a combination of learning theories	4	17.4%
Learning improves and assessment becomes valid	3	13%
The subject content and level of module will determine which learning theory/theories to use	3	13%
Enables awareness of where the students are coming from	2	8.7%
Creates interactivity in the class and captures the attention of the students	2	2.6
Behaviourist theories have been of great value in establishing whether learning has taken place after delivery of learning material. This is usually apparent from the learners' behaviour when assessed before and after a learning experience. Positive behaviour can be reinforced as appropriate and negative learning outcomes can be sanctioned as inappropriate	1	4.3%
Promotes creative learning	1	4.3%
Multi-media strengthens the understanding of content especially when English is the students second language (the message is better understood by showing a picture or video)	1	4.3%
Modules are practical, so students need to apply their theoretical knowledge to practice	1	4.3%
Never having formally studied theories of learning, professional insight into educational theory needed to be sought	1	4.3%
It is not easy to evaluate the value of incorporating learning theories in one's teaching	1	4.3%
Students adapt skills mastered in more than one course	1	4.3%
Promotes the principle of 'each one teach one' in pairing a weak student with a strong one (cognitively and language expression), as well as in the use of study buddies	1	4.3%
With constructivism students are part of the learning process and are responsible for their own learning	1	4.3%

5.5.1.11 Educational issues in blended learning pertaining to students

This section presents the findings regarding various educational issues in blended learning with a focus on LIS students.

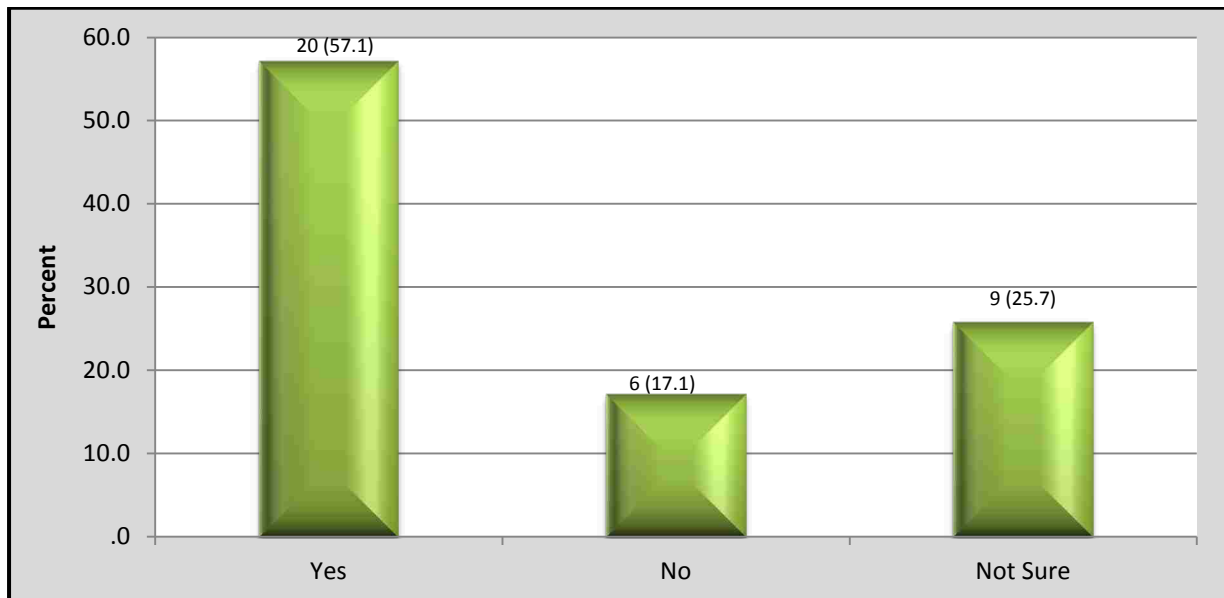
5.5.1.11.1 Educational support for students to facilitate blended learning

Respondents were asked if their institutions had educational support units for students. Thirty-five (35) of the 37 LIS educators responded to this. Figure 5.18 illustrates that a little more than half of the respondents (57.1%) were certain that their institution provided such educational support for their students while just over a quarter of the respondents (25.7%) were not sure about this.

Figure 5.18

[N=35]

Educational support for students to facilitate blended learning



5.5.1.11.2 Kinds of educational support for students

The respondents (20) who indicated that their institutions did provide educational support to their students were asked to specify the kind of support that they provided. Only 14 of the 20 LIS educators responded to this item. Table 5.17 indicates that a significant aspect of the educational support given to students is in the form of providing writing centres for developing writing skills (36%). The Centre for Higher Education Development (found in many universities) that provides services such as learning support, developing learning skills and addressing learning problems as well as supporting students with disabilities, also features high on the list of educational support to students. While many of the kinds of support reflected in Table 5.17 are general educational support and not specific to facilitating

blended learning, they are nevertheless still important for the bigger picture of contributing to the facilitation of learning in general.

Table 5.17

[N=14]

Kinds of educational support for students

Kind of support for students	Frequency	Percentage
Provision of Writing Centres for developing writing skills	5	36%
Centre for Higher Education Development provides a variety of support (e.g. learning skills, learning problems, etc.) for students	5	36%
Students are given support in using online tools in e-learning	3	21%
Counselling centres offer advice on relationship issues and stress and time management skills	3	21%
Students with disability issues are given support	3	21%
Centre for Information Literacy offers information literacy classes	2	14%
Library offers various support services to students e.g. classes on avoiding plagiarism	2	14%
Mentorship and tutor programmes are offered to students	2	14%
Training is offered to help students cope with open and distance learning	2	14%
Provision of academic literacy classes to improve the academic writing and presentation skills of students	1	7%
Students are guided in Curriculum Vitae (CV) preparation	1	7%
Provision of graduate school programmes	1	7%
Provision of Numeracy Centre for improving numeracy skills in students	1	7%
Teaching and learning support is provided	1	7%

5.5.1.11.3 Computer facilities at the institution for students

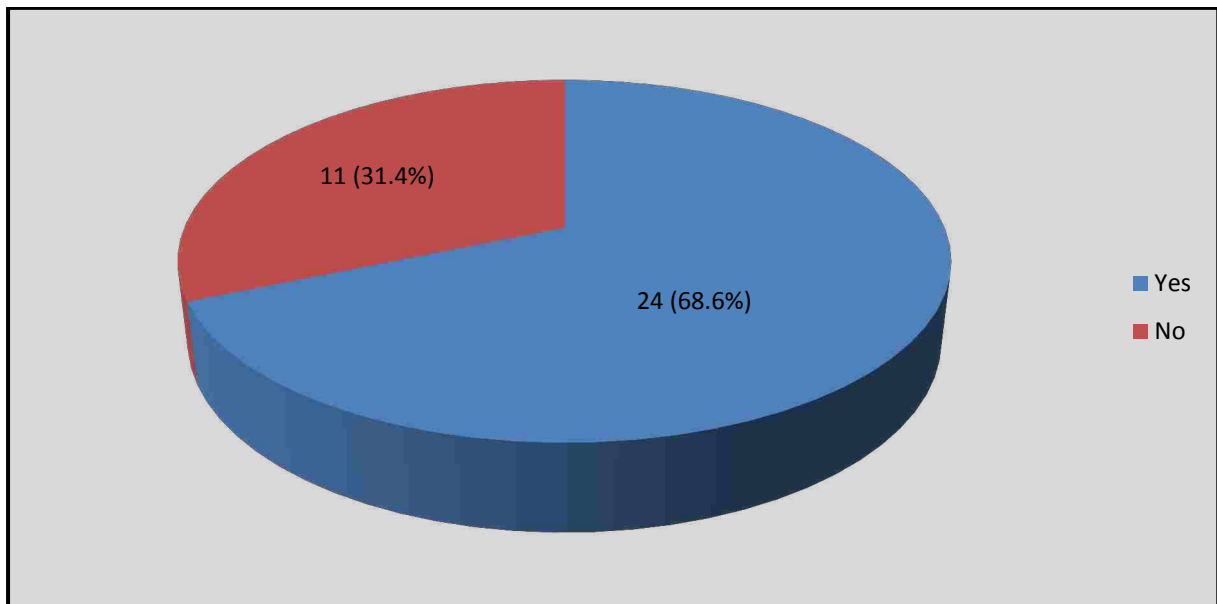
Respondents were asked if their departments or programmes had dedicated computer facilities for teaching and learning purposes. Thirty-five (35) of the 37 responded to this item. Figure 5.19 illustrates that 24 (68.6%) of the LIS educators surveyed indicated that they did

have dedicated computer facilities. This is encouraging as this would promote the facilitation of blended learning, especially the online aspects.

Figure 5.19

[N=35]

Dedicated computer facilities



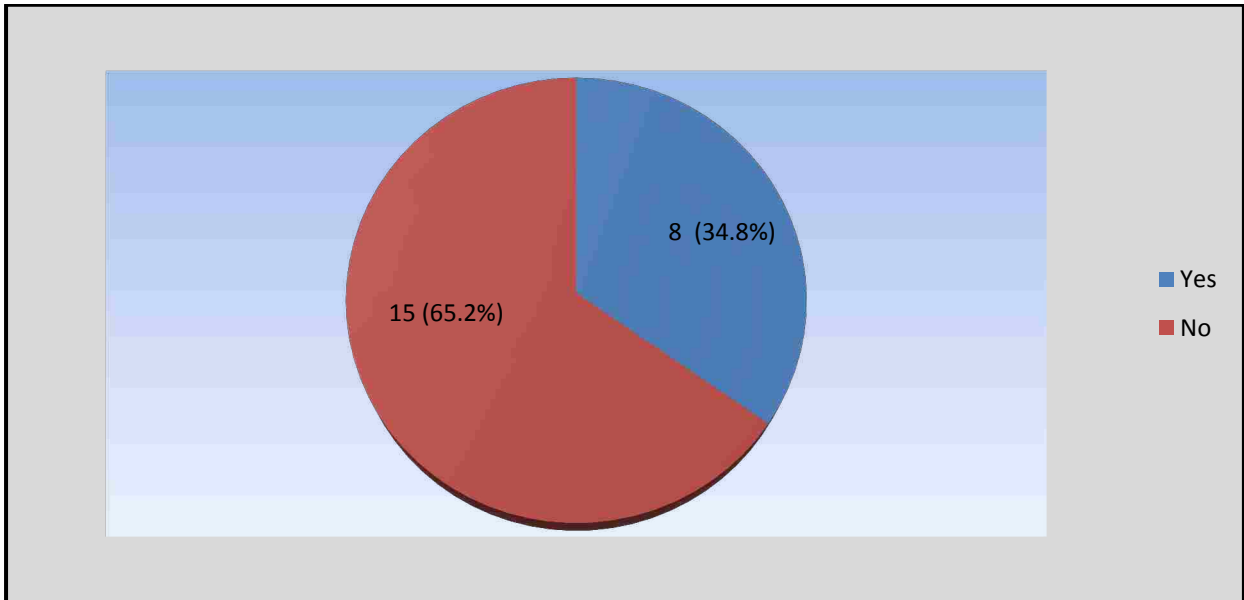
5.5.1.11.3.1 Sufficiency of computer facilities

The respondents (24) who indicated that they had dedicated computer facilities for their departments or programmes, were asked if these computer facilities were sufficient for all the students registered for a particular subject. Twenty-three (23) of the 24 LIS educators responded to this item. A majority of these respondents 15 (65.2%) stated that these facilities were not sufficient for all the students registered for a particular subject.

Figure 5.20

[N=23]

Sufficiency of computer facilities



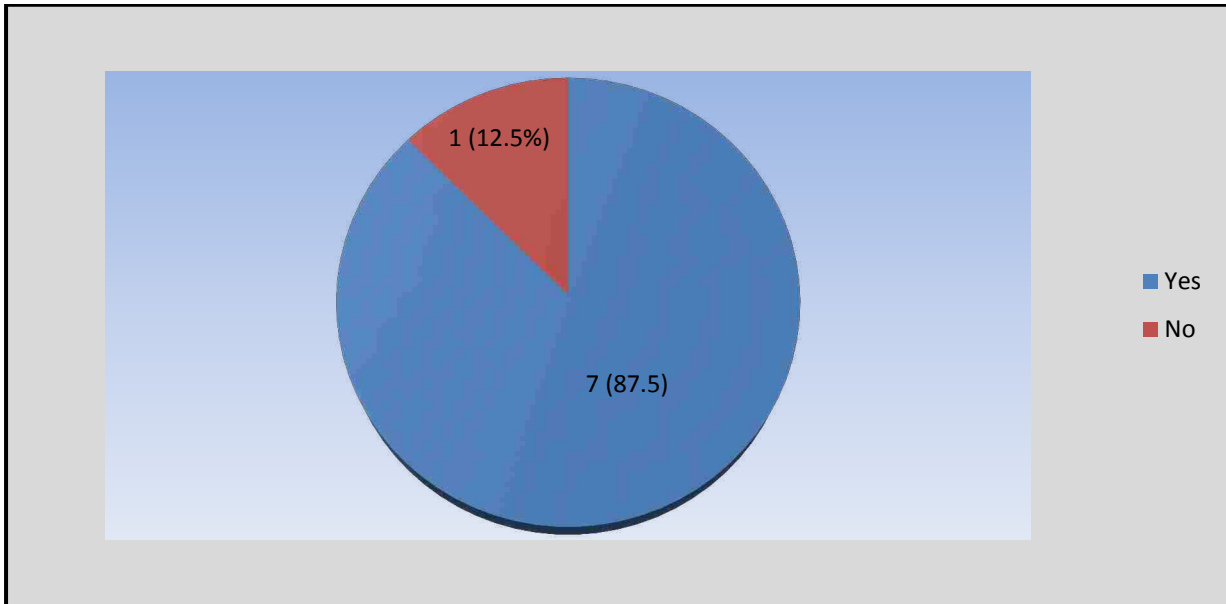
5.5.1.11.3.2 Capacity of computer facilities for latest technologies

Those respondents (8) who indicated that the computer facilities for their department or programmes were sufficient were asked if these computer facilities had the capacity to handle the latest technologies particularly with regard to learning management systems or other technology enhanced learning systems. On a more positive note Figure 5.21 shows that 7 (87.5%) of the 8 respondents who indicated that the computer facilities were sufficient for the number of students registered, indicated 'yes' that their facilities were upgraded to handle the latest versions of LMSs and other technology enhanced learning systems.

Figure 5.21

[N=8]

Capacity of computer facilities for latest technologies



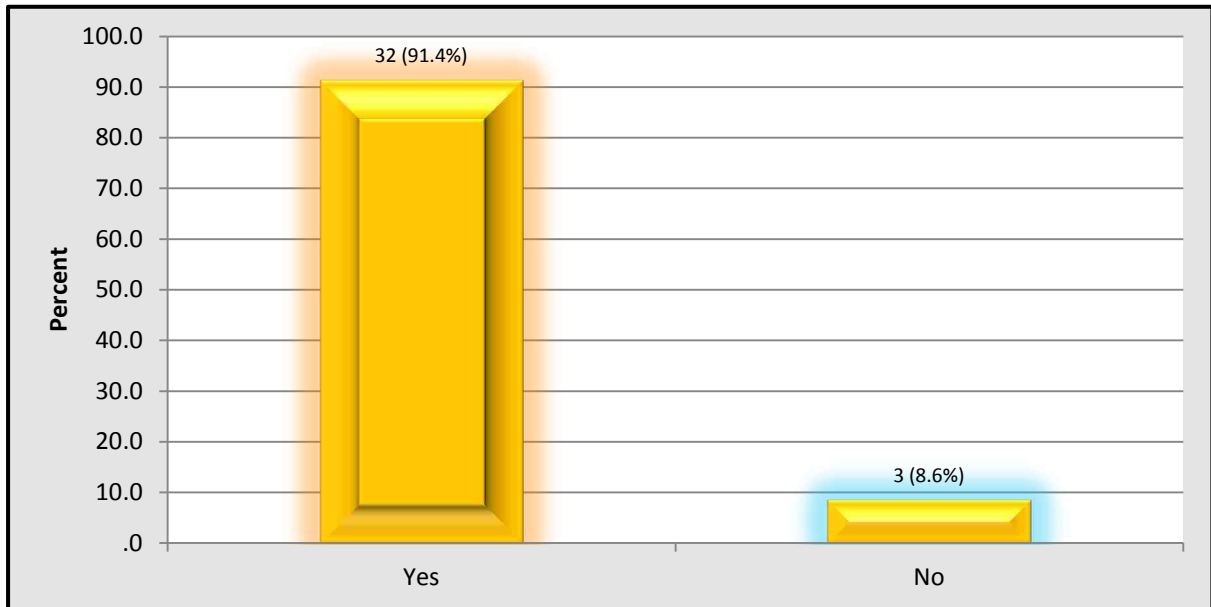
5.5.1.11.3.3 Provision of Internet access to students

Respondents were asked if their respective institutions provided Internet access to students. Thirty-five (35) of the 37 LIS educators responded to this item. The majority 32 (91.4%) of the LIS educators surveyed indicated that their institutions provided Internet access to their students (refer to Figure 5.22). Having Internet access is critical in online learning and for use of the latest versions of LMSs.

Figure 5.22

[N=35]

Institutional provision of Internet access to students



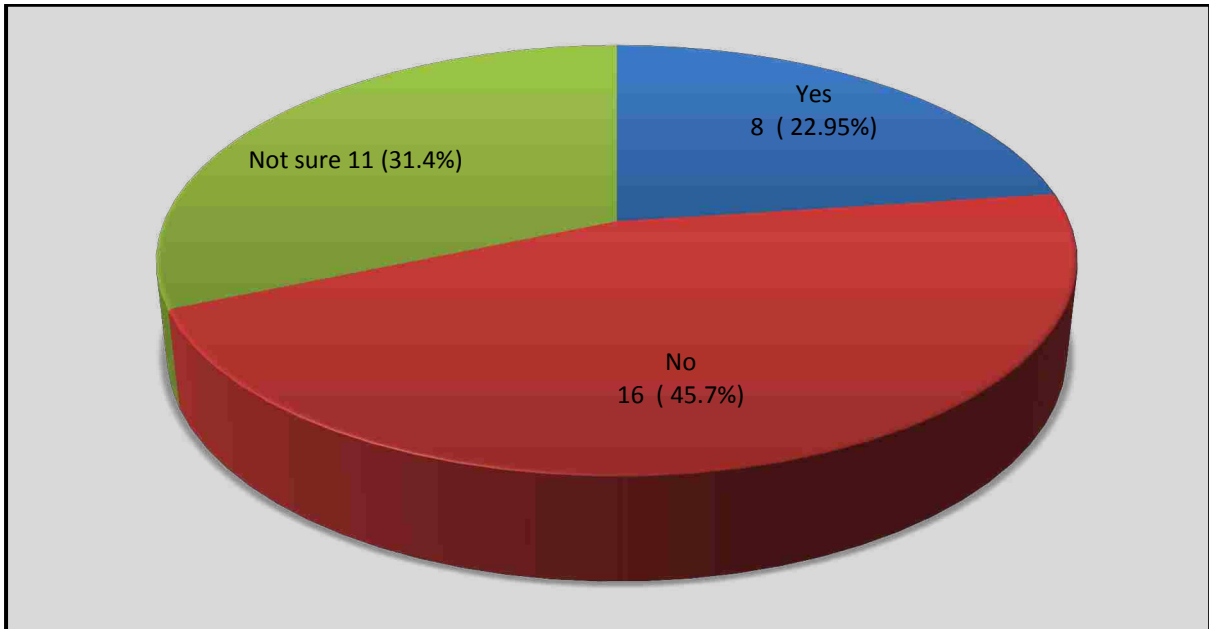
5.5.1.11.3.3.1 Student access to computers and the Internet out of campus

Respondents were asked whether the majority of the students had access to computers and the Internet out of campus. Thirty-five (35) of the 37 LIS educators surveyed responded to this item. According to Figure 5.23 nearly half of the LIS educators surveyed (45.7%) indicated that their students do not have access to computers and Internet out of campus. Only 8 (22.95%) indicated that their students do have access to computers and the Internet off campus and a significant 31.4% were not sure, which is indeed a concern. Educators who want to engage in blended learning need to know if students are able to access the online learning resources that they are required to work with.

Figure 5.23

[N=35]

Student access to computers and the Internet out of campus



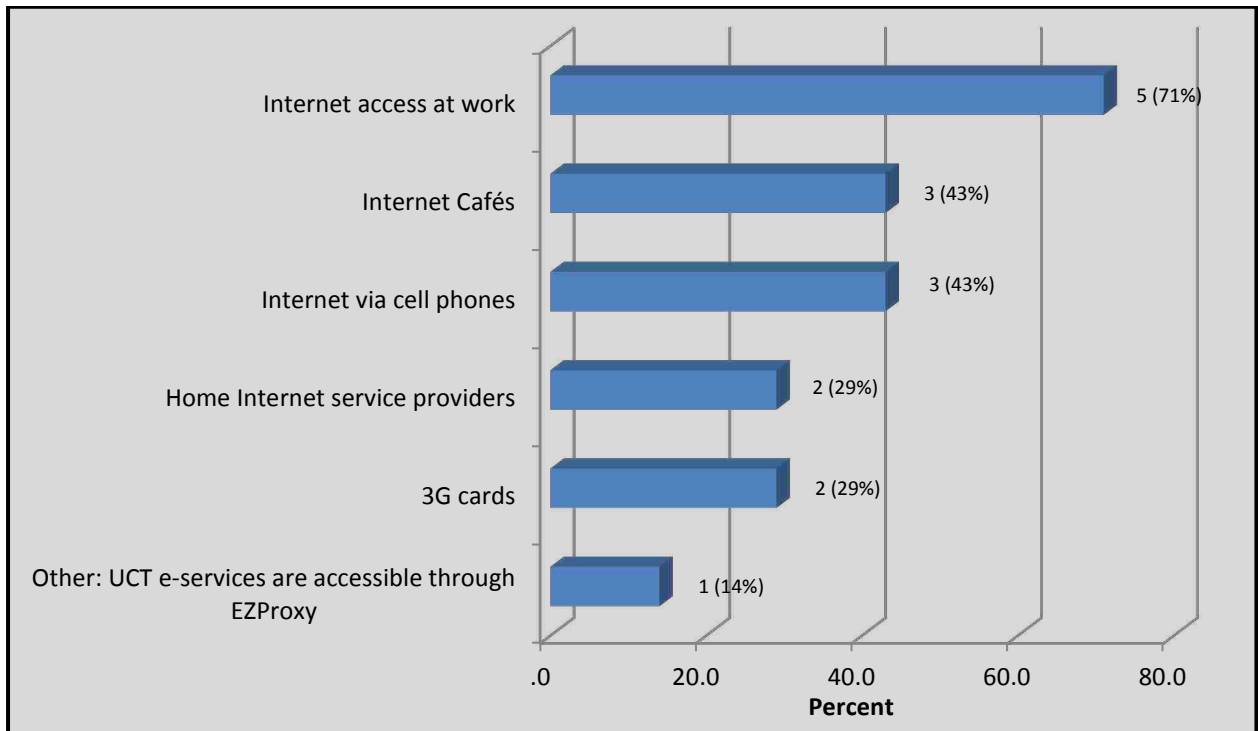
5.5.1.11.3.3.2 Means of Internet access out of campus

Respondents (8) who indicated that their students did have access to the Internet out of campus were asked to specify the means of access from a list provided (refer to Item 32 in Appendix A). Respondents could choose more than one option. Seven of the 8 LIS educators responded to this item. Most (5) of the LIS educators indicated that students had Internet access at their place of work (refer to Figure 5.24) and almost half (43%) indicated that students used Internet Cafés and the Internet via their cellphones.

Figure 5.24

[N=7]

Means of Internet access out of campus



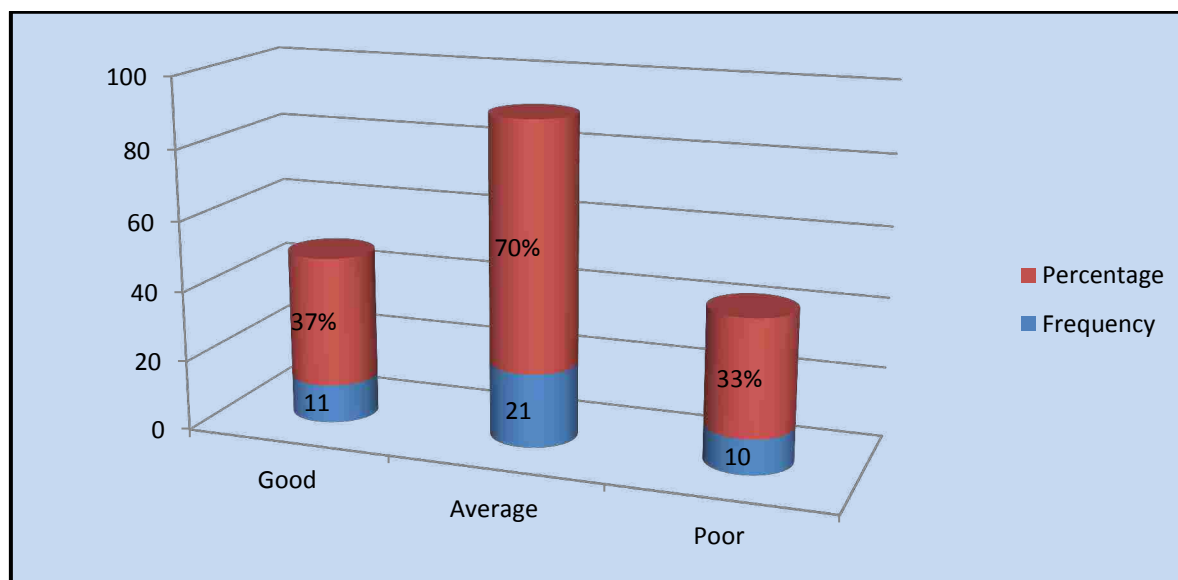
5.5.1.11.4 Computer literacy levels of students

LIS educators were asked to rate the computer literacy levels of the students in the subjects/programme(s) that they taught. Thirty (30) of the 37 LIS educators surveyed responded to this item. LIS educators surveyed indicated that the computer literacy levels varied in the different subjects/programme(s). LIS educators gave ratings for the subjects that they taught and most taught more than one subject. Most (70%) of the LIS educators indicated that the computer literacy level was average across the different subjects/programme(s) that they taught. The 11 (37%) LIS educators surveyed who indicated that the computer literacy levels of the students were good, were those with students in the 3rd year level subjects and postgraduate programmes. The 10 (33%) LIS educators who indicated that the computer literacy levels were poor, taught undergraduate, especially 1st level subjects and ACE (Advanced Certificate in Education) programmes.

Figure 5.25

[N=30]

Computer literacy levels of students



LIS educators were asked to indicate how they dealt with students with different levels of computer literacy. Their comments are captured in Table 5.18.

Table 5.18

[N=30]

Comments on dealing with students with different levels of computer literacy

Comments	Frequency	Percent
Students are taught the basic computer skills in a compulsory computer literacy module	11	37%
Computer-based assignments are given to encourage students to acquire computers skills	4	13%
Students are tutored during practical sessions to improve their computer literacy skills	3	10%
Peer instructional methods are used where students who are competent in using computers help students who have poor computer literacy skills	3	10%
Not much can be done with very large student numbers	3	10%
Provide a bridging module if necessary	3	10%
Individual guidance is given if the assistance required is limited	3	10%

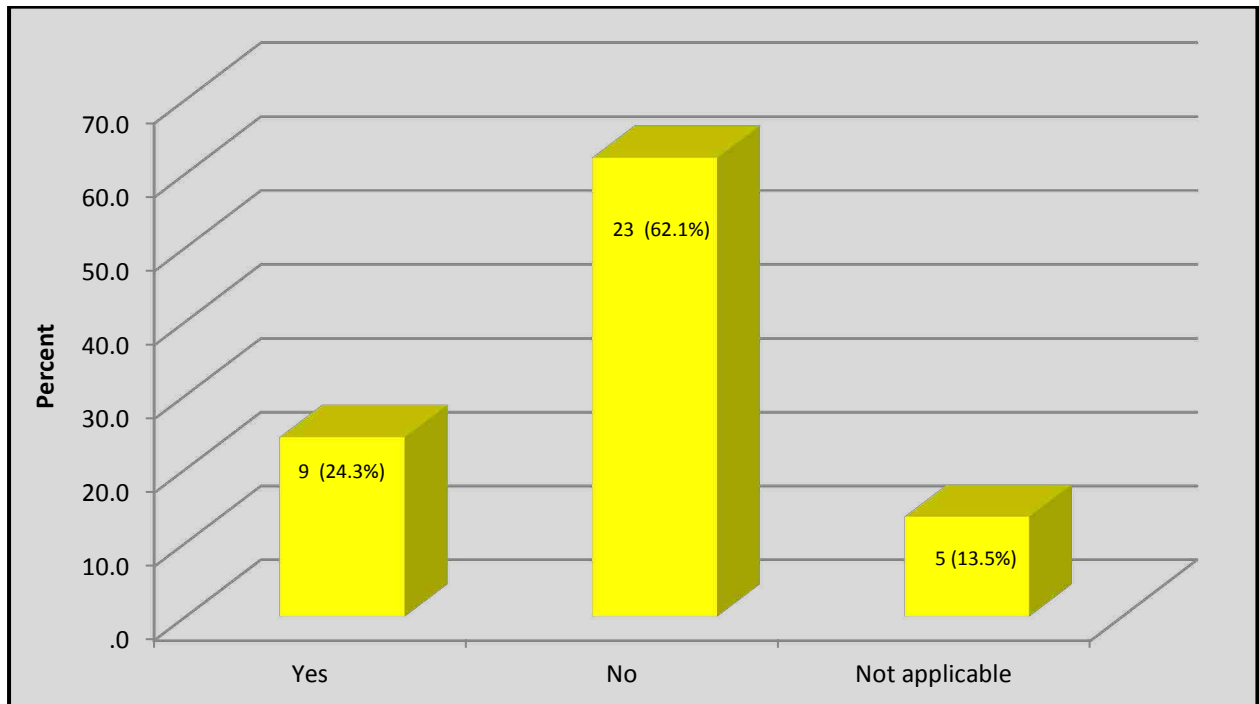
5.5.1.12 Collaborative teaching and learning interventions

Respondents were asked if they were engaged in any collaborative teaching and learning interventions related to blended learning within their institution or with other institutions. All 37 LIS educators responded to this item. Figure 5.26 illustrates that a majority of the LIS educators (62.1%) were not engaged in any collaborative teaching and learning interventions related to blended learning within their institution or with other institutions while an encouraging number of nine LIS educators (24.3%) were engaged in such collaboration.

Figure 5.26

[N=37]

Collaborative teaching and learning interventions



The respondents (9) who had indicated that they were engaged in any collaborative teaching and learning interventions related to blended learning within their institutions or with other institutions, were asked to indicate which departments these were and the nature of the collaboration. Only six of the nine LIS educators responded to this item and the findings are presented here in narrative form. Three LIS educators were involved with collaborative teaching and learning interventions with departments within their institutions: one of these educators engaged in co-teaching with the Computer Science, Commerce and Management departments; another worked with the Library, offering workshops on research and e-

research to all faculties; the third LIS educator collaborated with the Teaching and Learning Unit in its Information Literacy component of the Digital Literacy course taught by the Teaching and Learning Unit. The fourth LIS educator mentioned collaborating on an international level with the Education Faculty at the Universities of Namibia, Dakar (Senegal) and Finland, providing information literacy skills, knowledge management expertise as well as working with other libraries in these countries by communicating via social media. The fifth LIS educator indicated sharing modules with other educators in the Masters in Information Technology (MIT) Programme, a Carnegie funded programme that is delivered in mixed mode (online and contact) based at the University of Pretoria but also involving universities in Africa and the United States of America. The sixth LIS educator mentioned collaboration with a Musicology Department compiling a music bibliography; this, however is not related to blended learning.

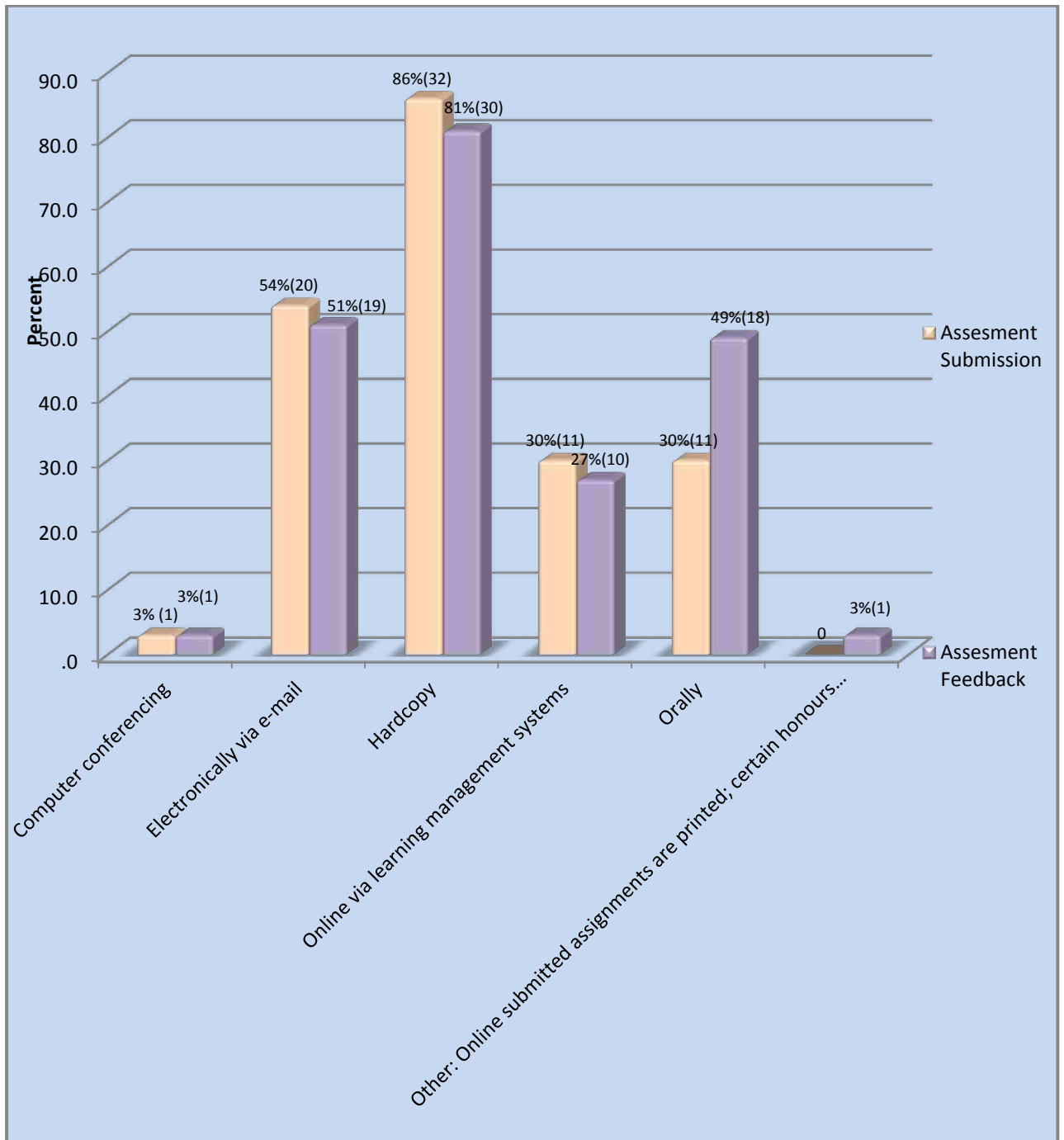
5.5.1.13 Students' assessment submission and feedback

Respondents were asked how assessments in their subjects were submitted to them by their students. Respondents were provided with options (refer to Items 48 and 49 in Appendix A). Each respondent could select more than one option. All 37 LIS educators responded. Figure 5.27 indicates that assessments are submitted predominantly (86%) via hardcopy and feedback is also predominantly (81%) provided in hardcopy. A significant number of LIS educators (49%) indicated that feedback was also given orally (that is, involving face-to-face interaction). Also noteworthy is that a significant number of LIS educators (54% and 51%, respectively) indicated that assessment submissions and feedback were done electronically via email. The 'other' response indicated that assessments that were submitted online were printed by the LIS educator for marking and feedback was given electronically.

Figure 5.27

[N=37]

Students' assessment submission and feedback



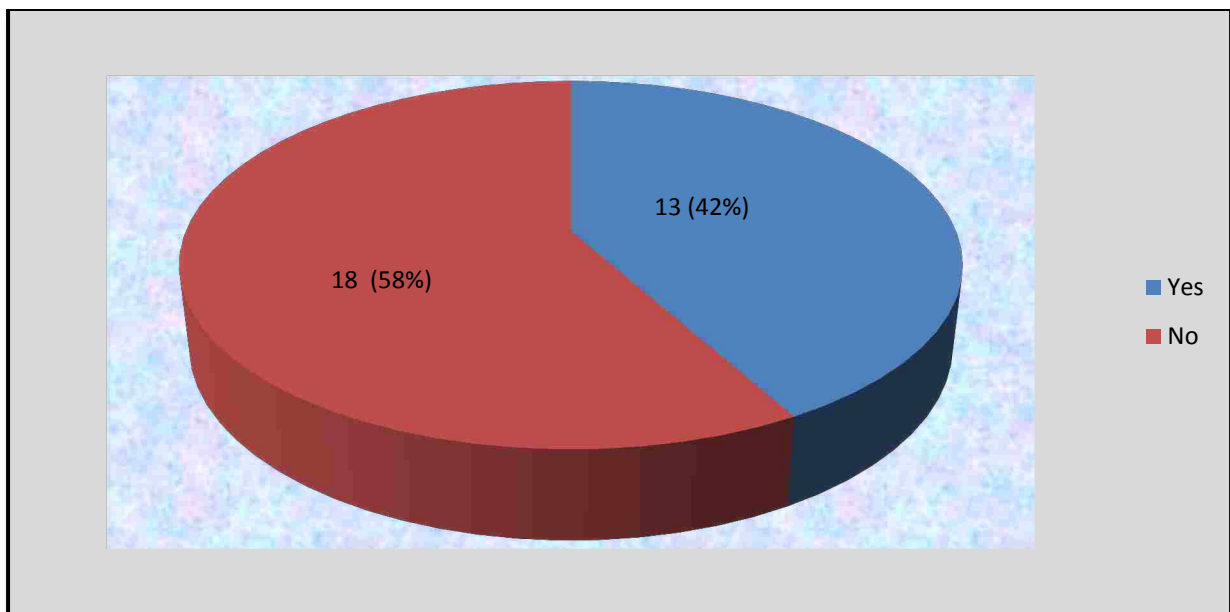
5.5.1.14 Blended learning framework

Respondents were asked if there was any blended learning framework or model currently being used at their institutions. The survey questionnaire explained such a framework or model to be a basic guide that helps plan, develop, deliver, manage and evaluate blended learning. Thirty-one (31) of 37 LIS educators responded to this item. Figure 5.28 illustrates that more than half (58%) of the LIS educators surveyed, 18, indicated that there was no blended learning framework or model currently being used at their institution.

Figure 5.28

[N=31]

Institutional existence of blended learning framework



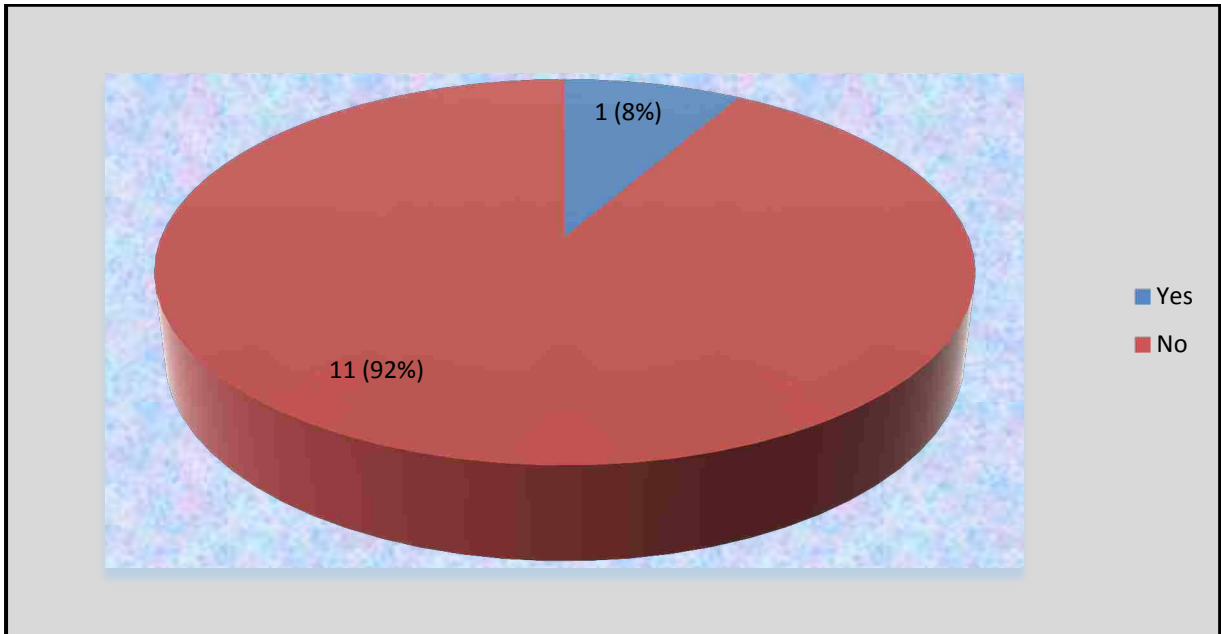
5.5.1.14.1 Use of blended learning framework

Respondents (13) who indicated that a blended learning framework was in place in their institution, were required to state whether they themselves have been using this framework. Twelve of the 13 responded to this item. Figure 5.29 shows that the majority of the 12 respondents (92%) indicated that they were not using the blended learning framework while only 1 (8%) indicated using the framework.

Figure 5.29

[N=12]

Use of blended learning framework



5.5.1.14.2 Strengths and weaknesses of using the blended learning framework

The single respondent who indicated that he/she was using the blended learning framework that was in place at his/her institution was asked to comment on the strengths and weaknesses of using it. The strengths and weaknesses indicated by this respondent are captured in Table 5.19. The respondent, however, did not provide strengths and weaknesses of a blended learning framework or model as a whole but rather of a particular LMS being used at the institution; and at that, cited more advantages than disadvantages of Moodle.

Table 5.19

[N=1]

Strengths and weaknesses of blended learning framework

Strengths	Weaknesses
The LMS that is adopted (Moodle) is very effective in getting participation from students	Sometimes technical support causes problems
Students respond well to self-assessment on Moodle	
The self-assessment on Moodle is also used in face-to-face and hardcopy assessments	

5.5.1.15 General comments

The Web survey questionnaire closed by inviting general comments on issues raised in the questionnaire. Only 12 LIS educators provided comments to this item. These comments are captured in Table 5.20.

Table 5.20

[N=12]

General comments on issues raised in the Web survey questionnaire

Comments	Frequency
As a department we do not have facilities that we can readily use for blended learning, unless we book and the facilities are available	1
In the future blended learning will be used to a greater extent	1
Own modes of delivery need to be enriched although the institutional training and rollouts of seamless classrooms are on track	1
Small classes in a residential university are being taught and strongly believe in the value of face-to-face interaction. Blended learning is not really appropriate in this environment, but might become so if circumstances should change	1
Lecturers do receive support from the ODL (Online Distance Learning) unit for any new applications that they want to apply in online teaching ODL	1
Less than 3% of students in courses have access to computers for teaching purposes	1
One of the most long standing controversies among LIS educators, and between employers, is the extent to which theory takes precedence over practical application in teaching. I hope to some extent this study will provide its view on this major curricula issue	1
Pockets of academic units within the university use WebCT and Moodle but there is no formal support for blended learning	1
Some of the issues asked are not necessarily a matter of "yes" or "no". There is always the possibility of "I don't know"	1
Some of the questions are broad pertaining to the institution. I could only answer questions based on my own courses	1
There is clearly great potential for using these tools and clear evidence that, if used correctly and in suitable circumstances, the benefits can be considerable. I am interested and excited by the possibilities but, to be quite honest, since I am close to retirement, I am also reluctant to spend a lot of time in re-developing materials for all my courses. I should, however, like to experiment with at least one course before I retire	1
Will use in future	1

5.5.2 Presentation of findings from semi-structured interviews with LIS educators

Data was collected from LIS educators who indicated in the Web survey (refer to section 5.5.1) that they used blended learning in their LIS teaching. This section presents the findings from the semi-structured interviews with the 15 LIS educators (refer to Appendix B). The responses were analysed using *NVivo 10 for Windows* software. With the use of NVivo software each transcript of the interviews with LIS educators was read and coded. Coding involved selecting phrases, sentences, paragraphs or entire sections of the transcripts that were allocated to a particular node. A node is where all the themes that emerge from the data are placed. Sometimes one text passage referred to several nodes and was used to contribute to different themes. Frequency counts and percentages are also presented, where relevant.

5.5.2.1 Current designation

Participants were required to confirm their current designation at the commencement of the interviews. This was done to ensure that the participant's job designation had not changed since the Web survey was conducted. Table 5.21 captures the designation and the institutional affiliation of the 15 LIS educators at the time of the semi-structured face-to-face interviews being conducted. To maintain the anonymity of the LIS educators the participants are referred as 'Educator A – O'.

Table 5.21

[N=15]

Current designation of interview participants

No.	Participant	Current designation	Institution
1	Educator B	Professor	University of Pretoria
2	Educator A	Associate Professor	University of Zululand
3	Educator M	Senior Lecturer	University of Fort Hare
4	Educator E	Senior lecturer	University of Fort Hare
5	Educator H	Senior Lecturer	University of South Africa
6	Educator I	Senior Lecturer	University of Pretoria
7	Educator C	Lecturer	University of South Africa
8	Educator D	Lecturer	University of South Africa
9	Educator F	Lecturer	University of Pretoria
10	Educator G	Lecturer	University of Limpopo
11	Educator J	Lecturer	University of the Western Cape
12	Educator K	Lecturer	University of Zululand
13	Educator L	Lecturer	University of Fort Hare
14	Educator N	Lecturer	University of the Western Cape
15	Educator O	Lecturer	University of South Africa

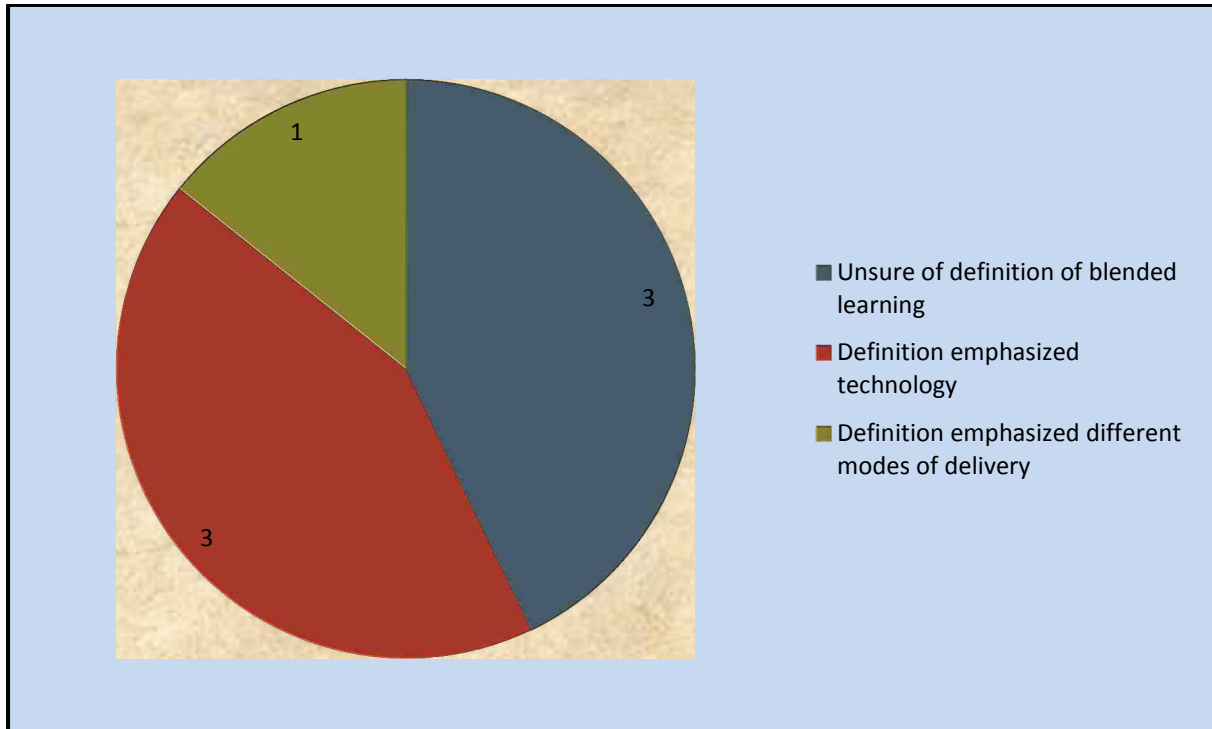
5.5.2.2 Concept of blended learning

At the initial stage of the interview when the first question was posed (refer to Appendix B) three participants wanted the researcher to define the concept blended learning while another four provided their definitions of blended learning with three placing emphasis on the use of technology in blended learning and one on the different modes of delivery. The remaining 8 did not raise issues around the definition of this concept. Figure 5.30 provides a summary of participants' responses with regard to their definitions of blended learning.

Figure 5.30

[N=7]

Concept of blended learning



5.5.2.3 Transformation in teaching and learning

Participants were asked if the use of blended learning has transformed teaching and learning in the courses that they teach, and if so, how the use of blended learning has transformed this teaching and learning. Table 5.22 indicates that as a result of blended learning there has been significant transformation in the delivery modes of instructional content to students.

Table 5.22**[N=15]****Transformation in teaching and learning**

Comments	Frequency	Percentage
It has changed teaching in terms of modes of delivery to students	5	33%
Communication with students previously consisted primarily of face-to-face conversations; presently online discussion forums and online chats are used	5	33%
There has been a move from human interaction to computer interaction	2	13%
More focus on information technology	1	7%
Transformed from chalk and talk to practical classes to online delivery	1	7%
Change in terms of relationship with students	1	7%
Previously taught smaller groups with more intensive teaching methods; now we are teaching larger groups of students where delivery methods need to change	1	7%
Distance learning with course material provided by post is now supplemented by using face-to-face discussion forums to online delivery	1	7%
Participation and collaboration have improved	1	7%
Easy to make changes on the electronic environment	1	7%
Students have become more IT literate and expect LIS educators to use the latest technologies in teaching and learning in LIS education and training	1	7%
E-Learning provides up-to-date content	1	7%

5.5.2.4 Critical and reflective thinking

LIS educators were asked how they use blended learning to support critical and reflective thinking. Some LIS educators made more than one comment regarding this. Table 5.23 reflects that LIS educators interviewed (20%) believe that students are generally lacking in

critical and reflective thinking skills and many of them (47%) agreed that LIS educators should set challenging tasks that would foster critical and reflective thinking. It is noteworthy that LIS educators acknowledge that critical and reflective thinking are extremely important and that blended learning is a step towards fostering critical thinking in LIS education.

Table 5.23

[N=15]

Critical and reflective thinking

Comments	Frequency	Percentage
Lecturers should set challenging tasks that foster critical and reflective thinking	7	47%
Students are lacking in critical and reflective thinking skills	3	20%
Critical and reflective thinking skills are extremely important	2	13%
Blended learning is a step towards critical thinking	2	13%
Get students to criticize and reflect on each other's work	2	13%
We have to focus more on e-courses that pull students into such thinking, that is, critical thinking to achieve higher order thinking	2	13%
Reflection is expected in portfolio assessments	1	7%
Critical and reflective thinking cannot be taught	1	7%
LIS students should be taught how to read critically, how to read against the grain and how to read what is not being said by authors	1	7%
Intensive workshops on critical thinking should be held	1	7%
Critical and reflective thinking are assessed in third-year essay type assignments	1	7%
Students should be exposed to different ideas and different approaches	1	7%
LIS students should be taught critical thinking and unique ways of thinking; creative is to know what there is, and to be able to, from that, find their own perspective	1	7%
Critical thinking is broad and varied. One should give students a rubric beforehand	1	7%
In terms of LIS education, I think it's important that we try to approach teaching differently	1	7%

5.5.2.5 Impact of blended learning on LIS education

Participants were asked to comment on how the use of blended learning has impacted on teaching and learning in LIS education at their respective institutions. Participants were prompted to comment on the following aspects:

- Motivation and satisfaction;
- Re-inforcement;
- Student retention;
- Access to computer facilities; and
- Cost effectiveness of using blended learning.

A notable number of LIS educators (4) interviewed indicated that blended learning has impacted very positively on LIS education with all of the aspects listed above (refer to Table 5.24). Other related aspects of blended learning that have impacted on LIS education are also captured in Table 5.24.

Table 5.24

[N=15]

Impact of blended learning on LIS education

Comments	Frequency
Blended learning has impacted very positively on LIS education	4
Presently LIS needs a very strong computer component	3
Information is more accessible to students	3
Making corrections, updating information and making it available to students wherever they are, has become easier	2
The content in LIS curriculum has changed but not the teaching methods	1
Being exposed to blended learning will enable students to work with content management system	1
Blended learning has improved student retention	1

5.5.2.5.1 Motivation and satisfaction

Participants were asked to comment on how blended learning had impacted on teaching and learning in LIS education. Only four educators commented on the aspect of achieving

motivation and satisfaction in teaching and learning using blended learning. Some LIS educators made more than one comment. The comments are captured in Table 5.25.

Table 5.25

[N=4]

Motivation and satisfaction

Comments	Frequency
Use varying teaching methods that motivate students	4
Use games to motivate students	2
Educators should have educational theory background to enable them to motivate students	2
Podcasting can be used to reinforce learning	1
Attaching prizes to learning activities motivates students	1

5.5.2.5.2 Re-inforcement

Only two of the 15 LIS educators made comments on the impact of blended learning on re-inforcement of learning material. The two educators who commented mentioned that various modes of delivery of the learning material should be made available to the students. Podcasts are to be used so that students are able to listen to the learning content as many times as they wish thus re-inforcing the learning content.

5.5.2.5.3 Student retention

Only two of the 15 LIS educators commented on blended learning as a means of attaining student retention. Their comments are captured in Table 5.26.

Table 5.26

[N=2]

Student retention

Comments by LIS educators
Students communicate the value of blended learning amongst themselves
Students see themselves as the young and ‘funky’ who are now the custodians of knowledge
Need to make LIS education more interesting to retain students
LMS, could be used to improve basic literacy levels of students

5.5.2.5.4 Access to computer facilities

Seven LIS educators provided comments on blended learning and access to computer facilities. Some educators made more than one comment. Table 5.27 illustrates that of the seven LIS educators that commented, six (86%) indicated that many students still did not have access to computer facilities. This is a concern as access to computers is critical in blended learning.

Table 5.27

[N=7]

Access to computer facilities

Comments	Frequency
Many students still do not have access to computer facilities	6
More computer facilities have become available to students	4
It is a problem for blended learning if students do not have access to online resources	1
Students have more access to the lecturer	1

5.5.2.5.5 Cost effectiveness of using blended learning

Only five LIS educators commented on the cost effectiveness of using blended learning. Some LIS educators provided more than one comment. Table 5.28 reflects educators' views that with blended learning students did not need textbooks as there are sufficient resources available via the Internet, and that LIS educators are easily able to update resources and study guides electronically. This saves on the cost of printing.

Table 5.28

[N=5]

Cost effectiveness of using blended learning

Comments	Frequency
Lecturers can update and upload study guides and other resources on the Internet	2
No prescribed textbook. Students use resources on the Internet	2
Automatic feedback saves costs	1
Many students have smart phones with wireless access	1
Using twitter to communicate with students	1

5.5.2.6 Learning theories and learning styles

Participants were asked to comment on how learning theories and learning styles informed the educational design and facilitation of blended learning in their respective learning programmes. They were also prompted to outline the benefits of aligning the learning theories and learning styles with learning outcomes. Disappointingly, this item was not addressed sufficiently by the participants. They did not address the question adequately but rather deviated from the question asked. Some, nonetheless, provided more than one comment. A recurring response (33%) seems to have been that participants were not trained as educators and therefore did not have the necessary educational theory background to do or comment on the above. This could explain the unsatisfactory response to this item. Three (20%) LIS educators used a constructivist approach to teaching and learning while another

three (20%) admitted to not doing conscious research on learning theories, and a further three (20%) explained that they receive assistance in design of course material from the institution's teaching and learning unit. Table 5.29 captures responses relating to learning theories.

Table 5.29

[N=15]

Learning theories

Comments	Frequency	Percentage
Not trained as educators, do not have educational theory background	5	33%
Constructivist learning theory is used in the educational design of blended learning interventions	3	20%
We do not consciously research on learning theories and learning styles	3	20%
We get the teaching and learning unit to assist in the design of course material	3	20%
Cognitive theory and learning is used	2	13%
We give students study guides with a lot of exercises	2	13%
By using different platforms for students to access the learning resources e.g. LMS and other e-resources	1	7%
Combination of different learning theories are applied	1	7%
Connectivism is used to inform blended learning interventions	1	7%
Consult with teaching section in institution to incorporate learning theories to compile study guides	1	7%
Difficult to answer	1	7%
Do not know if there are any learning theories that could be used in LIS education	1	7%
Contact time should be maximized to deepen understanding of content, not as a means to merely transmit the content to students	1	7%
Need to consider the level of study	1	7%
Prefer chalk and talk	1	7%

The LIS educators' responses with regard to learning styles are captured in Table 5.30. Some (five or 33%) used different approaches for different assignments to cater for the various learning styles while four (27%) catered for verbal and visual learning styles.

Table 5.30

[N=15]

Learning styles

Comments	Frequency	Percentage
Use different approaches for different assignments	5	33%
Use verbal and visual learning styles	4	27%
Use a combination of learning styles	3	20%
Use different modes of delivery. We try and combine visual with most modes of delivery	2	7%
Own knowledge and preferences incorporated into the study material with a lot of exercises	2	7%
Difficult to answer	1	7%
Language is also a barrier in catering for the different learning styles	1	7%
No learning style inventory used. Not confident that they work	1	7%
No time to ascertain learning styles	1	7%
Right brain orientated students prefer logical structure while left brain orientated students prefer multimedia	1	7%
We have different levels of learning and reading skills, therefore it is difficult to compile	1	7%
Would like to acquire a polling type system to ascertain learning styles	1	7%

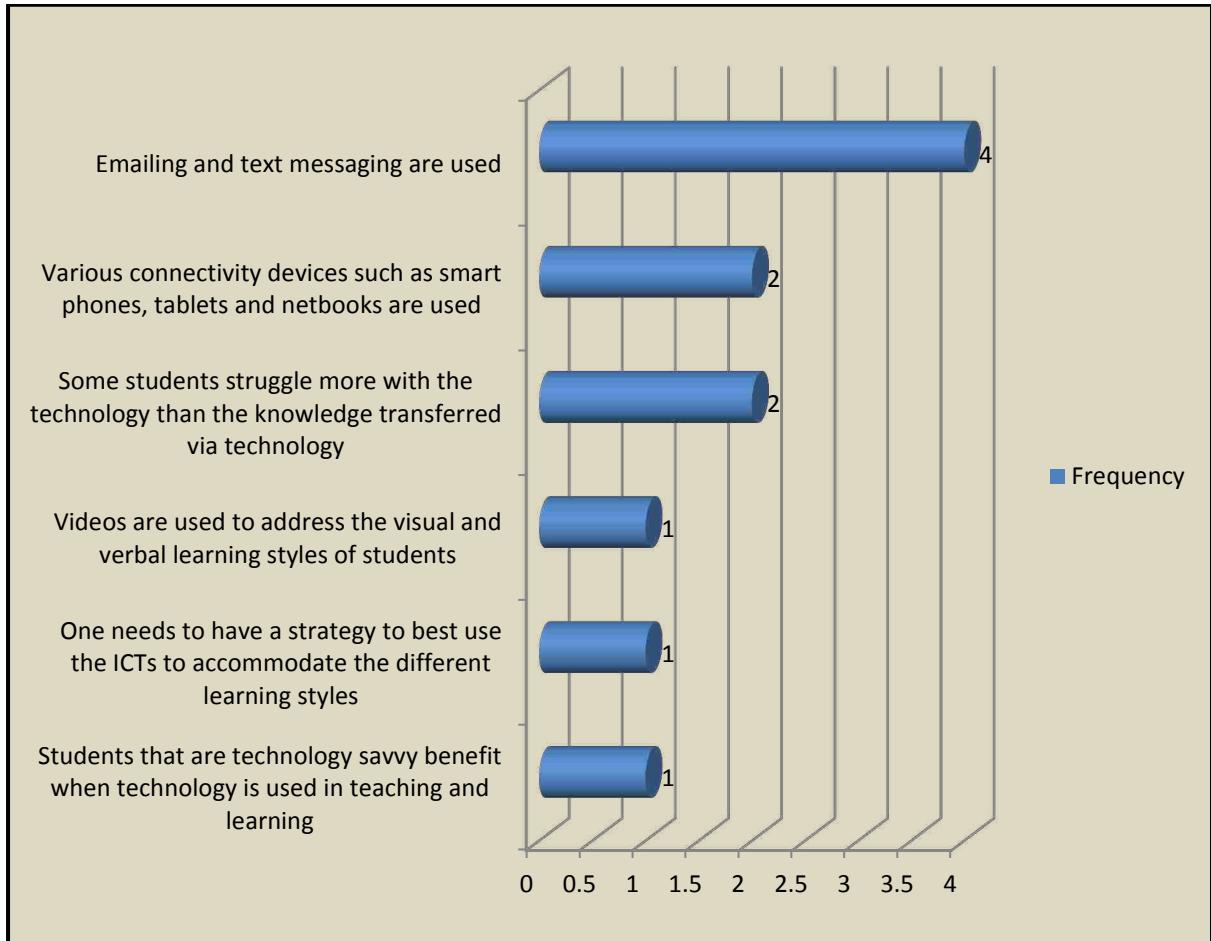
5.5.2.6.1 Technology tools and learning styles

Participants were asked to comment on how the different technology tools (Internet, text messaging, wikis, mobile learning devices, etc.) were used to address the different learning styles when designing and facilitating blended learning in their respective programmes. Only 11 LIS educators responded to this item. Figure 5.31 illustrates that emailing and text messaging are the most used technology tools in blended learning.

Figure 5.31

[N=11]

Technology tools and learning styles



5.5.2.7 Pedagogical principles used in blended learning design, development and delivery

LIS educators were asked to highlight the pedagogical principles they used in blended learning design, development and delivery in the courses that they teach. Table 5.31 illustrates that almost 50% of the LIS educators interviewed, used a student-centred approach to teaching. This makes sense as a student-centred approach is conducive to blended learning.

Table 5.31

[N=15]

Pedagogical principles used in blended learning

Comments	Frequency
Student-centered approaches are used	7
Industry and LIS schools need to work together to ascertain what is best for the LIS sector	3
Experiential training is promoted	2
A particular pedagogic style is not generally used	1
Critical thinking is advocated	1
Power issues in dealing with libraries	1
LIS educators should be aware of and include constructivist approaches into LIS education.	1
Teaching is not static	1
Promote active learning	1
Information retrieval, information management and knowledge management are the prime principles that are taught	1
Problem-based approach is used	1

5.5.2.7.1 Impact of advances in technology on teaching in LIS the curriculum

LIS educators were asked if advances in technology had impacted on their teaching in the LIS curriculum. All 15 responded to this affirmatively. LIS educators were also prompted to comment on the impact of ICTs on communication and collaboration. Table 5.32 indicates that almost half (47%) of LIS educators interviewed indicated that a lot more technology is now being used in teaching in the LIS curriculum, with a further 33% stressing the ‘mode of communication has changed’. It is also interesting to note that some (40%) educators highlighted challenges with the use of technology in LIS education.

Table 5.32

[N=15]

Impact of technology on LIS education

Comments	Frequency	Percentage
A lot more technology, especially ICTs, is used	7	47%
The use of technology sometimes interrupts the teaching process especially with those students who struggle to use the technology or have a phobia for technology. Sometimes the technology does not work or is too slow	6	40%
Mode of communication has changed to online	5	33%
LMSs and other e-resources can be used 24 hours a day, 7 days a week	3	20%
LIS is moving in the direction of Computer Science	2	13%
Students should also be taught how the technology works e.g. by getting them to create Web pages, wikis, blogs, etc.	2	13%
ICTs have made teaching and learning more interactive	2	13%
Podcasts are used	2	13%
Collaborate with IT department to teach technology courses	2	13%
Constructive feedback is given via the LMS	2	13%
Students need to see that LIS educators are using the technologies as it will motivate them to participate in the modules	2	13%
LIS curriculum needs a strong IT component	1	7%
Blogs are used	1	7%
Still reluctant to use social media	1	7%
Challenge is that some LIS educators and students have a phobia for technology	1	7%

5.5.2.7.2 Years of teaching and teaching methods

LIS educators were asked if the number of years that they had been teaching has impacted on the teaching methods that they used. They were also prompted to comment on the factors that

guided their choice of teaching methods. Six of the participants commented that their teaching methods have changed over the years while 3, puzzlingly, were not sure (refer to Table 5.33).

Table 5.33

[N=15]

Years of teaching and teaching methods used

Comments	Frequency
Teaching methods have changed over the years	6
Not sure	3
Moved from chalk and talk to Internet based teaching	1
Experience is the best teacher	1
Teaching method depends on the class	1
Want to change, adapt and move with technology but does not always work for one	1
Depends on one's personality and how one works and how comfortable you are with using blended learning	1
Use technology more to adapt teaching	1

5.5.2.7.3 Methods of teaching used

LIS educators were asked to indicate the methods that they used in their teaching and how they aligned these teaching methods to their learning outcomes. Table 5.34 indicates that all 15 participants used blended learning in their teaching (this is what the Web survey revealed and hence these educators were targeted for interviews).

Table 5.34

[N=15]

Methods of teaching used

Comments	Frequency
Blended learning	15
Group work and teamwork	3
Face-to-face	2
Practicals	2
Our teaching is based on a study guide	1
Some modules do use prescribed books	1
Online	1

All 15 participants indicated that their teaching methods were aligned to the learning outcomes and that the learning outcomes did lend themselves to the use of a combination of teaching methods. Two participants also added that evidence of what is achieved is ascertained in the assessments as the assessments also needed to be aligned to the learning outcomes.

5.5.2.7.4 Modes of delivery

LIS educators were asked if they used a variety in terms of modes of delivery and if they answered in the affirmative, did they align these modes of delivery with the learning styles of their students. LIS educators were prompted to discuss modes of delivery such as visual-verbal presentations, self-instructional, individual consultation, etc.

Thirteen (13) of the LIS educators indicated that they used a variety of modes of delivery, referring primarily to face-to-face and using technology such as blogs, twitter, e-mails, podcasts and LMSs to varying degrees. The other two LIS educators indicated that they used only face-to-face modes of delivery that consisted of discussion classes and consultations with students.

With regard to the visual-verbal presentations, all 15 LIS educators used verbal presentations as a delivery mode, while only three LIS educators indicated using visual-verbal presentations in the form of videos, PowerPoint presentations and the Internet. One LIS

educator indicated that the students that come from a culture of oral tradition prefer the verbal mode of delivery.

Self-instruction delivery methods were used by LIS educators offering distance education. Instructional content and exercises were provided in the study guide. One LIS educator considered assignments and self assessments as self-instructional.

Only three LIS educators engaged in discussing aligning the delivery modes to the learning styles of students. They indicated that using a variety of visual-verbal presentations of delivering content catered for the different learning styles of their students.

5.5.2.7.4.1 Face-to-face/Dialogue and discussion teaching

Participants were asked how much of their teaching is facilitated by face-to-face/dialogue and discussion interaction. All 15 participants (100%) indicated that they still use face-to-face interaction to varying degrees. Some LIS educators made more than one comment. One educator indicated still using 80% face-to-face method of teaching while the others did not indicate the percentage. Face-to-face seems to still be the predominant approach to teaching LIS at higher education institutions. Table 5.35 shows that more than half of the LIS educators interviewed used debate and discussion as a delivery mode, while five used lectures with data projectors.

Table 5.35

[N=15]

Types of face-to-face interaction

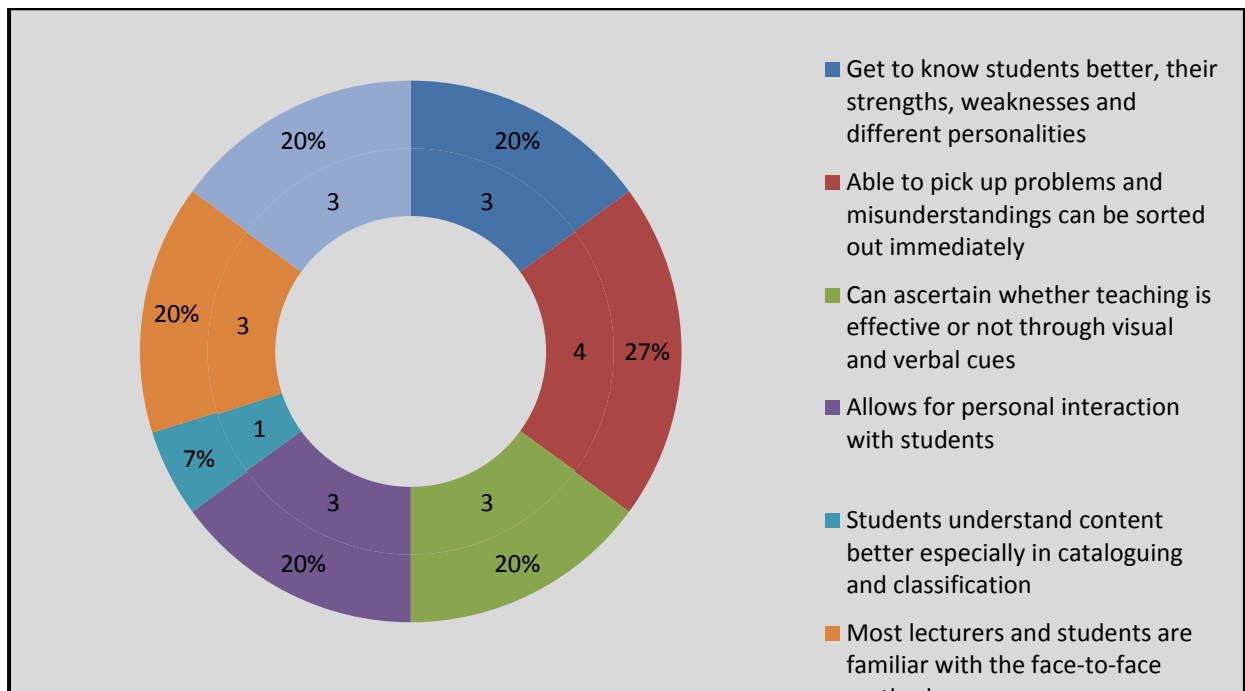
Type of face-to-face interaction	Frequency
Debate and discussion	8
Lecture using data projector	5
Chalk and talk	3
Consultation	3
Group work	2
Workshops	2

LIS educators were asked to comment on the advantages or benefits of using dialogue and discussion/face-to-face interaction. The main advantage seems to be that with face-to-face interaction educators are able to pick up problems easily and misunderstandings can be sorted out immediately (refer to Figure 5.32).

Figure 5.32

[N=15]

Advantages of using face-to-face interaction



5.5.2.7.5 Use of technology in facilitating teaching and learning

LIS educators were asked how they used technology to facilitate teaching and learning in the courses that they taught and how this has impacted on teaching and learning of these courses. Their responses are captured in Table 5.36. It would seem that technology has had the most impact on teaching and learning in terms of communicating online and providing feedback on assessments electronically. It is of concern that some students are reluctant to use technology.

Table 5.36**[N=15]****Use of technology in facilitating teaching and learning**

Comments	Frequency	Percentage
Some students are reluctant to use the technology	4	27%
Feedback on assessments are better to administrate electronically than in hardcopy	4	27%
Communication with students is done online	4	27%
Use video conferencing	2	13%
Honours level and higher are offered online	2	13%
Supplement face-to-face using blogs	2	13%
Use podcasting	2	13%
Students create databases, webpage design and online tools like blogs and wikis	2	13%
Use Blackboard LMS	2	13%
Students tend not to read notes and lectures online	2	13%
Some lecturers are reluctant to use technology	2	13%
Students do not attend class if the notes are available online	2	13%
Students that are proficient in the use of the Internet assist other students who are not so proficient in Internet use	2	13%
Blackboard is interactive	2	13%
Assessments are done online	2	13%
Some students express themselves better online	2	13%
There are a lot of valuable and free online resources that can also be linked to the LMS	2	13%
Have interactive Dewey online but students do not want to use it. They are not familiar with the format. They are more familiar with the social media format.	1	7%

5.5.2.7.6 Blended learning practices for higher order learning

Participants were asked to discuss their current blended learning practices to engage students in higher-order learning (critical, creative and complex thinking) that is needed in higher education. It would seem that current blended learning practices use ICTs which has enabled blended learning (refer to Table 5.37). Sadly, none of the interviewees made mention of higher-order learning.

Table 5.37

[N=15]

Current blended learning practices

Comments	Frequency
ICTs have enabled the blended approach	3
Face-to-face lectures and consultations and e-mails	2
Publication industry is changing rapidly in terms of e-journals and e-books therefore LIS students should be trained be good intermediaries between the publication industry and the user	2
Current curriculum should embrace changes in the LIS landscape. Current curriculum needs to be blended with e-changes	2
ICTs are vital. Makes teaching and learning more interactive	2
Open source software and resources are enabling blended learning	2
Not using much technology for teaching and learning	2

5.5.2.7.7 Theory and practice

LIS educators were asked if theory took precedence over practical work in the courses that they teach. They were also asked to discuss the assessments they used to evaluate the theory and practical aspects of the courses that they teach. Table 5.38 shows that four (27%) of the LIS educators indicated that theory and practice carried equal weighting (50-50) while three LIS educators differ slightly by indicating a 60-40 theory-practical weighting.

Table 5.38

[N=15]

Theory and practice

Comments	Frequency	Percentage
Work integrated learning is considered practice	6	40%
50-50 theory-practical component maintained	4	27%
There must be a strong link between theory and practice	4	27%
60-40 theory-practical component maintained	3	20%
Emphasis is on theory	3	20%
Practice is essential, hence emphasis on practice	3	20%
There should be a balance between theory and practice	3	20%
Cataloguing and classifying are done practically	1	7%
Difficult to use blended learning for practical work	1	7%
Done away with practical work in classification. Practical work is done in databases and information retrieval	1	7%
Online version of Dewey is not meant for teaching	1	7%
Students do portfolios based on practice	1	7%
Workshops work well for practicals	1	7%

5.5.2.7.8 Interactive teaching and learning

Participants were asked how they achieved interactive teaching and learning in the courses that they teach. LIS educators were also prompted to indicate whether interactive teaching and learning has produced changes in learning patterns and practices. Four (27%) of the LIS educators interviewed indicated that most practical sessions are interactive (refer to Figure 5.39). Unfortunately none of the LIS educators interviewed indicated whether interactive teaching and learning produced changes in learning patterns and practices.

Table 5.39

[N=15]

Interactive teaching and learning

Comments	Frequency
Most practical sessions are interactive	4
Used in varying degrees	3
Have interactive workshops	3
Group discussions are interactive	3
LMS is interactive e.g. online discussion forum	2
Technology and Web tools have made teaching and learning interactive	1
Students prefer to use social media for education	1
Set assignments using Twitter and discussion forums that are assessed	1
Make face-to-face feedback with students interactive	1
Have interactive video conferencing	1

5.5.2.8 Key pedagogical principles for developing a blended learning framework for LIS education

LIS educators were asked to comment on the key pedagogical principles that needed to be considered when developing a blended learning framework for LIS education. Table 5.40 captures the salient comments made by LIS educators interviewed. It is interesting to note that three of the 15 LIS educators interviewed indicated that educators with education training background would be better equipped to develop blended learning interventions as the subject specialists did not have formal pedagogy background.

Table 5.40

[N=15]

Key pedagogical considerations for blended learning framework

Comments	Frequency
Educators with education training background can contribute to developing blended learning interventions as subject specialists do not have formal pedagogy background	3
Move in the direction of using technology in teaching and learning in LIS education and training	2
The LIS curriculum needs to change to keep abreast of the latest trends in the LIS sector	2
Increase the use of online resources	2
Enlist the help of educational support units at institutions to design and develop instructional material	2
Ensure that the students are connected to the Internet. They need to be connected and interactive	2
Repackage instructional material and combine the best of chalk and talk with online resources	2
Should consider using all kinds of technology platforms in delivering LIS education	1
Important that LIS students understand information organisation and retrieval	1

5.5.2.8.1 Possible impact of framework for blended learning on LIS education

Participants were asked to discuss the impact a framework for blended learning could have on teaching and learning in LIS education. It was encouraging to note in Table 5.41 that five (33%) of the LIS educators interviewed were interested in a blended learning framework for LIS education and believed that it could work for the LIS discipline while others believed that such a framework would be used by LIS educators, that it would help LIS educators to align learning theories with learning styles, and that it would encourage LIS educators to learn more about teaching and to reflect on their teaching practices.

Table 5.41**[N=15]****Possible impact of framework for blended learning on LIS education**

Comments	Frequency	Percentage
Such a framework would be interesting and something that could work for LIS educators	5	33%
Framework would be used by LIS educators	3	20%
Framework would help to align learning theories with learning styles	3	20%
It would help to learn more about teaching and to reflect on teaching practices	3	20%
It would help educators that do not have education training background	2	13%
There is so much information in terms of blended learning; thus a framework will help LIS educators	2	13%
The many specializations in LIS education would make it difficult to develop a framework. Educators would need to map the framework into their own subject field to make the framework useful	2	13%
A framework would make LIS educators more aware of the potential of using blended learning	2	13%
It could foster collaboration amongst institutions in terms of designing courses and sharing resources. Can also share staff skills	2	13%
LIS professional body (LIASA) should support the framework	1	7%
Framework should make the blend obvious	1	7%
Need to consider National Qualification Framework (NQF) levels and South African Qualification Authority (SAQA) guidelines	1	7%

5.5.3 Presentation of findings from the semi-structured telephone interviews with facilitators of blended learning

Data was collected from facilitators in the educational support units of the six institutions that were revealed in the initial Web survey (refer to Section 5.5.1 of this chapter) to they have educational support units that used blended learning interventions. This section presents the findings from the semi-structured telephone interviews with the 10 institutional facilitators of blended learning (refer to Appendix D). The responses were analysed using *NVivo 10 for Windows* software. With the use of NVivo software each transcript of the telephone interviews with facilitators of blended learning was read and coded. Coding involved selecting phrases, sentences, paragraphs or entire sections of the transcripts that were allocated to a particular node. One text passage, at times, referred to several nodes and was used to contribute to different themes. The data was grouped into themes. Frequency counts and percentages are also presented, where relevant.

5.5.3.1 Current designation

Participants had to confirm their current designation at the commencement of the interviews. This was done to ensure that the participant's job designation had not changed since the Web survey was conducted. Table 5.42 captures the designations of the participants at the time of the semi-structured telephone interviews with facilitators of blended learning, as well as the institutions they came from. Again, to protect anonymity, personal names are not used.

Table 5.42

[N=10]

Designation of facilitators of blended learning and their institutions

Facilitator	Current designation	Institution
Facilitator 1	Instructional Designer	University of Pretoria
Facilitator 2	Educational Designer	University of Pretoria
Facilitator 3	Project Manager	University of Pretoria
Facilitator 4	Education Consultant	University of South Africa
Facilitator 5	Head: E-learning	University of Limpopo
Facilitator 6	Education Technologist	University of Fort Hare
Facilitator 7	Education Technologist	University of Limpopo
Facilitator 8	Education Technologist	University of Limpopo
Facilitator 9	Co-ordinator: Instructional Design	University of the Western Cape
Facilitator 10	Head: E-Learning	University of Pretoria

5.5.3.2 Academic support for blended learning

Participants were asked to comment on the academic development opportunities that were available to academic staff with regard to the use of blended learning interventions at their respective institutions. They were also prompted to elaborate on how these academic development programmes impacted on teaching and learning at the institution. It can be observed in Table 5.43 that seven (70%) of the facilitators indicated that their institutions offered training for e-learning using learning management systems (LMS) and also ran various workshops on content development and management, assessments and other training such as Turnitin training.

Table 5.43**[N=10]****Academic support for blended learning**

Comments	Frequency	Percentage
Run training courses for each of the components of LMS	7	70%
Run workshops on content development and management, assessments, Turnitin training, etc.	7	70%
Induction of academic staff into teaching and learning at the university which all new lecturers have to do and during that week of induction they get a session on blended learning	4	40%
Systems training intervention encourages lecturers to use different tools, collaboration tools and the learning unit tools which they find beneficial for teaching	3	30%
There are numerous custom designed workshops around blended learning activities	3	30%
An overview workshop for four hours is conducted with all new academic staff	2	20%
Work with lecturers in integration of academic literacy and information literacy into the curriculum	2	20%
Train lecturers to use podcasts and video casts	2	20%
We offer short courses on assessment, on teaching, facilitation of teaching and curriculum development	2	20%
Provide training on Internet and email, PowerPoint and computer literacy	1	10%
An educational approach is used and aimed at educational strategies for particular contextual issues	1	10%
Personalized training is also offered	1	10%
Lecturers either register for the qualification (Postgraduate Diploma in Higher Education training) which offers a module on Web-based learning or lecturers can take Web-based learning as a stand-alone course for 10 credits	1	10%

Only six facilitators responded to the prompt to elaborate on the impact of institutional academic development programmes on teaching and learning. Perhaps with some of the institutions the impact has not yet been assessed. Table 5.44 reveals that Deans, HoDs and students all want blended learning interventions.

Table 5.44

[N=6]

Impact of institutional academic development programmes on teaching and learning

Comments	Frequency
More lecturers are using LMS	3
We have more departments using the online quizzes to engage their students and to keep them on par with their work especially in the very big classes. This enhances the student to progress	3
The Deans and HODs are pushing from the top and the students are pulling from the bottom. They all want to have learning materials available via the Internet	3
Students support each other and also interact with the lecturer online	2
Feedback from staff and students is extremely positive	2

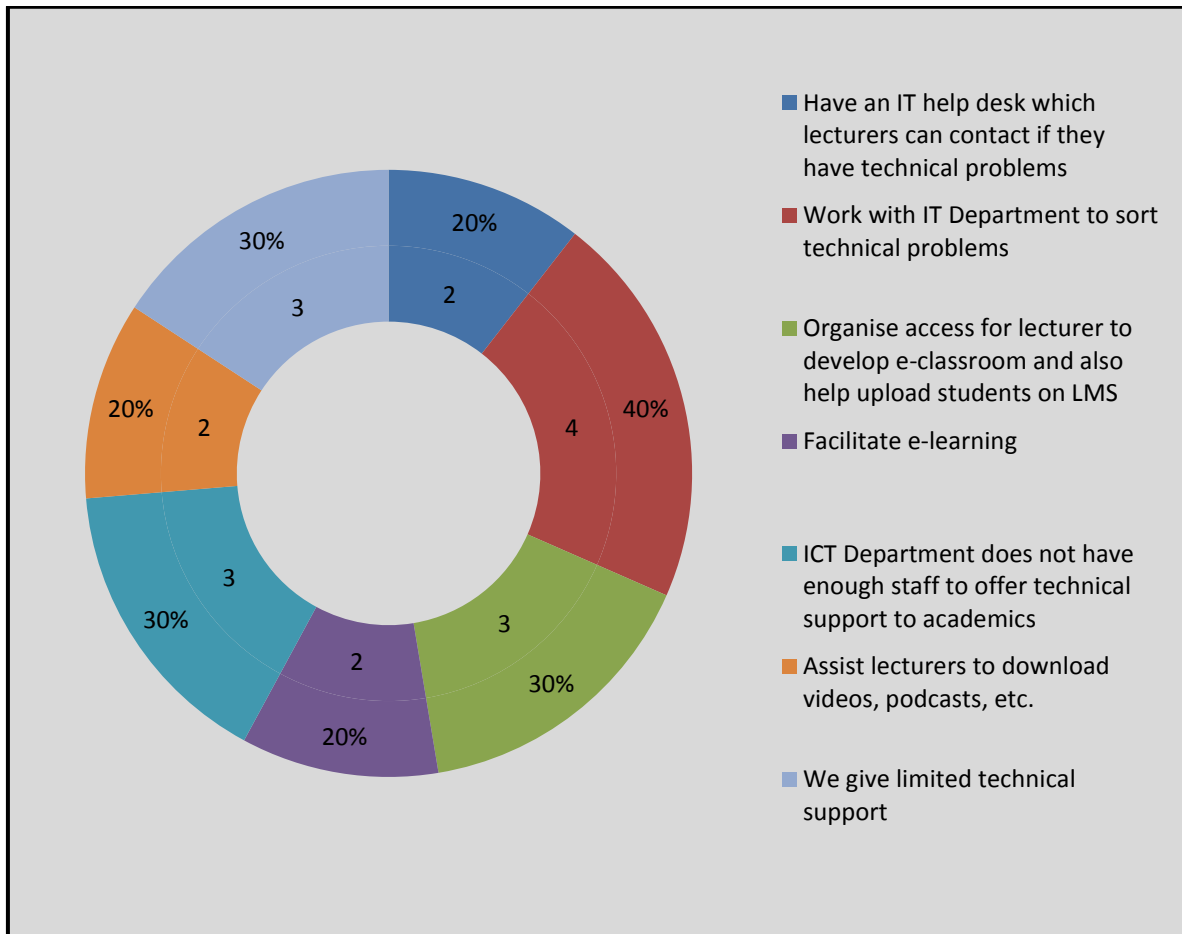
5.5.3.3 Technical support for LIS educators to facilitate blended learning

Facilitators of blended learning were asked to comment on the technical support that they offered to academic staff at their institutions to facilitate blended learning. Some facilitators made more than one comment. It is useful to observe in Figure 5.33 that facilitators (40%) interviewed indicated that they have a working relationship with their institution's IT Department to sort out technical problems encountered by lecturers.

Figure 5.33

[N=10]

Technical support for LIS educators to facilitate blended learning



5.5.3.4 Design and development of course material

Facilitators of blended learning were asked what support they gave academics at their institutions with regard to design and development of course material that require educational technology. Table 5.45 usefully demonstrates that academics have authority of course content in the design and development of blended learning course material. Four (40%) facilitators interviewed confirmed that they assist academics with design and planning of blended learning course material on a consultative basis and a further four (40%) indicated that they assist with overall planning and overview in terms of using LMSs.

Table 5.45**[N=10]****Design and development of course material**

Comments	Frequency	Percentage
Lecturers assume authority of the actual content of the modules	5	50%
We provide help with planning and with overview of LMS tools	4	40%
We help with design and planning of blended learning interventions with the lecturer, on a consultative basis	4	40%
In the workshops we provide lecturers with a theoretical background and then give them time to plan and develop their modules	4	40%
Multimedia productions of instructional material are developed by a project team with a videographer, photographer, designer and education consultant	2	20%
Educational consultant helps with outcomes assessments and course material	2	20%
We integrate technology into all our practices as a teaching and learning centre	2	20%
We have staff that specialize in blended learning	1	10%
Needs analysis would be done to assist with design and development of blended learning interventions	1	10%
We set up learner profiles to be able to cater for the learning styles of students	1	10%

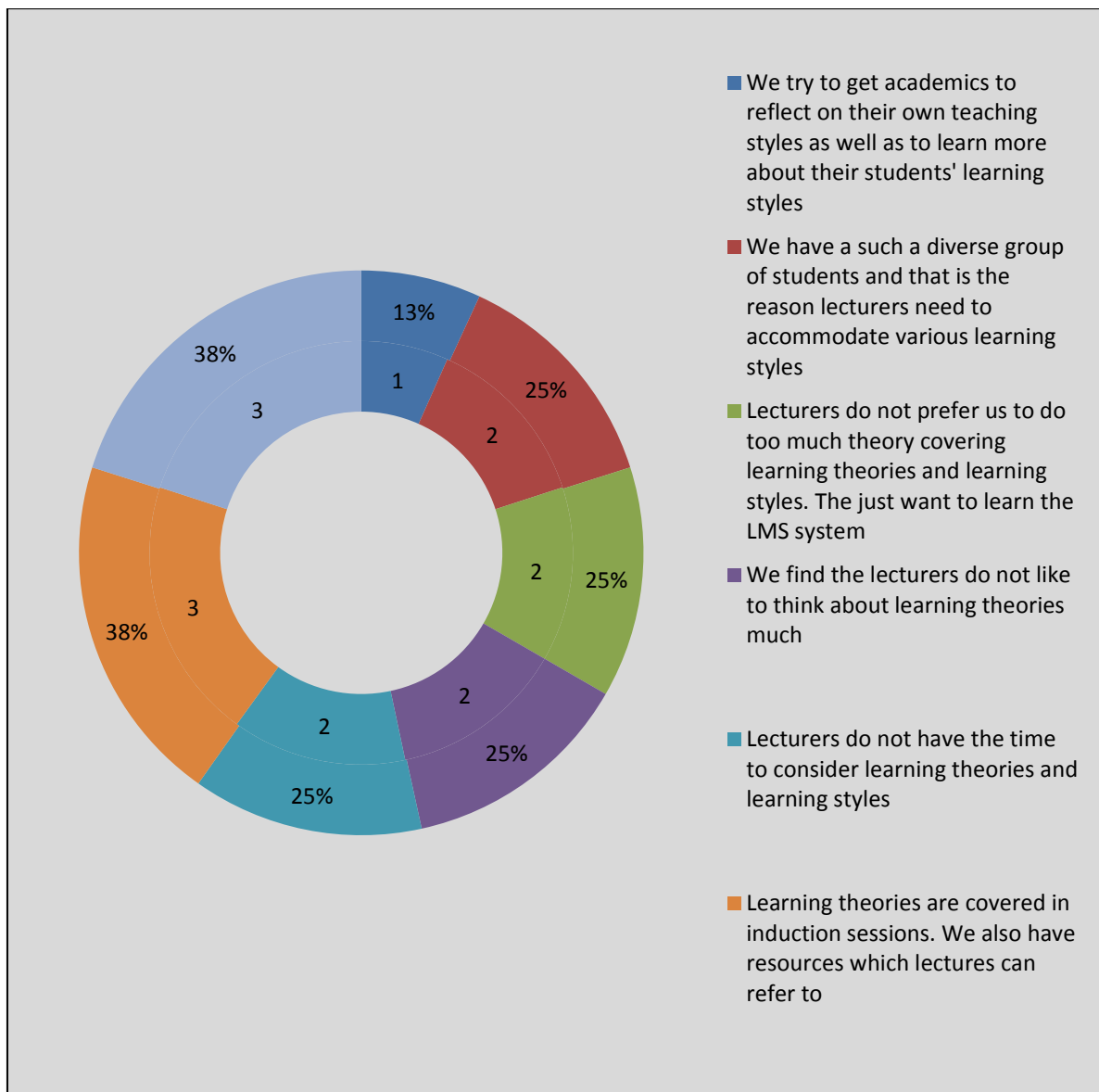
Participants were also asked if learning theories and the various learning styles were incorporated in the design and development of course material that use educational technology. Only eight facilitators responded. More than one comment was made by some facilitators. The higher frequencies in Figure 5.34 demonstrate that facilitators of blended learning interviewed emphasized the importance of taking into consideration learning theories and learning styles when designing blended learning courses, and hence some of

these facilitators (38%) indicated that learning theories were covered in their induction sessions as well as provided as online resources for academics to consult.

Figure 5.34

[N=8]

Learning theories and learning styles in the design and development of course materials using educational technology



5.5.3.5 Educational and technical support offered to students

Facilitators of blended learning were asked to comment on the educational and technical support that was offered to students that used educational technologies in blended learning

interventions at their respective universities. Table 5.46 shows a healthy 50% of the facilitators indicating that training on using educational technologies such as LMSs is covered during orientation sessions when students enter university.

Table 5.46

[N=10]

Educational and technical support offered to students

Comments	Frequency	Percentage
Orientation sessions for students also cover use of educational technology such as LMSs	5	50%
Our computer literacy, information literacy and academic information management modules includes support for using the LMSs	3	30%
We have a student help desk where students can go to for their technical problems and there is online resource material available	3	30%
Students who have problems using the system can request for training sessions either face-to-face or online	2	20%
Students are given guides to navigate the online resources	2	20%
Customized training is offered for postgraduate students	1	10%
We have a Web site that offers online training sessions	1	10%
We do not handle student support but only for academics	1	10%
There are insufficient computer facilities for the students	1	10%
The institution provides free wireless Internet usage for students	1	10%
Face-to-face training is offered and further supported by email, telephone support as well as the option of students coming directly to our offices anytime	1	10%
We offer blogging training and blogs are also used to market the learning management system	1	10%

5.5.4 Presentation of findings from focus group discussions with LIS students

Data was collected from six focus group discussions involving LIS students exposed to blended learning interventions at the six institutions where LIS educators had indicated that they used blended learning. This information was extracted from the Web survey (refer to Section 5.5.1 of this chapter). This section presents the findings from the focus group discussions with LIS students exposed to blended learning interventions (refer to Appendix G). The responses were analysed using *NVivo 10 for Windows* software. With the use of NVivo software each transcript of the focus group with LIS students was read and coded. Coding involved selecting phrases, sentences, paragraphs or entire sections of the transcripts that were allocated to a particular node. There were times when one text passage referred to several nodes and was used to contribute to different themes. The themes and findings are presented by means of narratives.

5.5.4.1 Number of participants in each focus group

The number of participants for each focus group ranged from six to 12 participants. Table 5.47 shows the number of participants for each group and the institutions they emanated from.

Table 5.47

Number of participants in each focus group

Focus group	Number of participants	Institutions
Focus group 1	8	University of South Africa
Focus group 2	12	University of Pretoria
Focus group 3	6	University of the Western Cape
Focus group 4	12	University of Fort Hare
Focus group 5	9	University of Limpopo
Focus group 6	6	University of Zululand

5.5.4.2 Blended learning interventions offered to LIS students

Participants in each focus group were asked to discuss the blended learning interventions that were offered in their respective programmes. Although the definition of blended learning was

provided to students in an information sheet (refer to Appendix E), a few LIS students still wanted the definition of blended learning clarified. Participants saw blended learning as a combination of “variants”. After revisiting the definition of blended learning all participants agreed that they were exposed to varying degrees of blended learning interventions in their respective LIS programmes. Most students stated that they preferred both face-to-face as well as online interventions. A few, however, still preferred face-to-face but realise that they have to embrace the new technologies considering that the LIS sector is now rooted in the digital environment.

The modes of delivery mentioned were primarily verbal-visual presentations using PowerPoint presentations, mostly self-instructional for Focus Group 1 where students were from a distance learning institution and all students indicated that they were exposed to individual consultations with LIS educators.

LIS students indicated that the most common methods of teaching were face-to-face, e-learning using Web-based learning management systems, and distance formats with study guides and tutorials combined with a Web-based platform. Most students indicated that they would not like to have only online learning; they believed that the lecturer’s presence and support were still needed.

5.5.4.3 Challenges with using blended learning

A majority of the LIS students (with the exception of those in Focus Group 2) indicated their biggest challenge with e-learning was the cost implications of buying personal computers, after-hours access to the Internet and the Internet being slow. A few indicated that they did not “trust” the change to an e-learning environment.

A few students admitted that they struggled with using the technology and wanted more training on using the systems.

5.5.4.4 Methods of teaching

Most students indicated that face-to-face lectures were the most prominent method of teaching used in LIS education but with advances in technology lecturers were using more technology in their teaching.

5.5.4.4.1 Face-to-face

The LIS students indicated that the face-to-face methods included:

- Lectures;
- Lectures with PowerPoint presentation;
- Lectures using overhead projectors (OHPs);
- Debates;
- Group discussions;
- Face-to-face consultations; and
- Workshops.

5.5.4.4.1.1 Advantages of face-to-face interaction

A majority of the students seem to enjoy the interaction of face-to-face contact. They explained that if they did not understand something they could address it immediately with the lecturer. Students also found that they remembered the content better especially when engaging in heated debates and discussion. They claimed that face-to-face interaction also gives students the confidence to speak in class.

A few students indicated that they found the one-on-one consultation sessions with lecturers very useful as the lecturer could go into detail with the sections they did not understand and also guide them in the right direction.

A majority of the students indicated that they understood the content better with the face-to-face interaction but would like the lectures recorded and downloaded onto the LMS so that they could go back and revise the work at any time.

5.5.4.4.1.2 Disadvantages of face-to-face interaction

The students who studied via distance learning and attended discussion classes found that the discussion classes were not very useful as they only addressed the difficulties experienced by students in attendance and sometimes the attendance was very poor. Students indicated that they would have preferred a summary of sections covered in the course during the discussion classes. Most students did not like it when lecturers used textbooks and read from the textbook during lecture sessions.

A few students indicated that some lectures using transparencies can be very boring. A few students also mentioned that face-to-face interaction could be very embarrassing when the lecturer reacted “negatively” to question situations in the classroom. This, they explained, sometimes deters students from asking questions in class as the question could be perceived as “a stupid question”, whereas in online discussions the lecturer is not physically present.

5.5.4.4.2 Online learning

The majority of the LIS students indicated the following online teaching methods were employed by LIS educators:

- LMS, with Blackboard being the most used LMS. Blackboard was used by participants in 50% of the focus groups. Moodle was used by participants in one focus group and participants in the remaining two focus groups were exposed to customised teaching and learning systems;
- Blogs;
- Websites; and
- Podcasts (only one focus group indicated using podcasts while the other groups indicated that they would like their lectures recorded and downloaded as podcasts).

5.5.4.4.2.1 Advantages of online learning

The advantages forwarded by LIS students with regard to online learning included 24/7 access to e-resources; they did not have to purchase textbooks as the resources were available online; they have easier access in terms of communicating with their lecturers electronically via e-mail, sms, LMS, etc.; it was also easier to submit assignments online. They claimed that online quizzes were also very helpful with immediate feedback. Feedback from lecturers, they claim, is better and can also be viewed online. The announcements are also very useful, according to the students participating in the focus group discussions. Students also indicated that they preferred the audio and video resources employed in online learning.

5.5.4.4.2.2 Disadvantages of online learning

LIS students cited network problems as the biggest disadvantage of using online resources. Students complained that they had downtime or the networks were very slow. Students also had technical problems with accessing the site passwords that did not allow students to access

the systems. A majority of the students indicated that they did not have Internet access especially off campus.

Students also remarked that they could not pick up facial expressions and verbal cues in the online discussions.

5.5.4.5 Educational benefits of blended learning

The majority of the LIS students indicated that blended learning prepared them for the LIS sector particularly with regard to using the current advances in technology.

Most students said that one of the benefits of using an LMS was that they could go back to the notes or the discussion forum and the material would be there for them to review at any time. They also indicated that an LMS was helpful when they miss classes – with the LMS they do not have to miss out on work that was covered in class.

Most students indicated that prior reading posted on the LMS helped them to understand the material better during lectures as they have already familiarised themselves with the content. They also indicated that this way they were better equipped to ask questions on aspects they did not understand.

With blended learning, e-resources are always up-to-date. These resources, the students claimed, could also be accessed anywhere and at anytime. Queries could be sent online as well. Most LIS students indicated that they liked the fact that all the different online tools could be accessed via the learning management system, for example, they could access their course notes and e-resources that are relevant and authentic as well as use the system for communication.

Most students found that blended learning was very cost effective as students do not have to buy any course material. Further, lecturers could post the resources and course notes online which saves on printing costs. Also, since all the material is available online there is no need to purchase textbooks. Assessments are also submitted online which again saves on printing and paper costs.

Most students indicated that they felt motivated when different modes and methods of teaching were used.

5.5.4.6 Learning styles and methods of teaching

LIS students were asked if they had any idea what their learning styles were. Almost all the students indicated that they did not know their learning styles. Participants in one focus group indicated that a few in the group had taken a learning style test.

Most students indicated that they were visual and verbal learners and found it easier to recall content if it was presented visually or audio-visually as in video recordings. The distance learning students indicated that they would like more video-conferencing sessions. Almost all the students indicated that they would prefer to have the content presented in podcasts or video casts (video and audio). A few of the students also indicated that they would like the lecturers to use Skype.

Most students indicated that using visuals were much more effective than using words only. However, a few students indicated that the videos needed to be interactive. Lecturers should not just give a student a video to watch. One student indicated that he would not want to listen to an audio or watch a video where the person speaks in a foreign accent which was difficult to comprehend. There should be subtitles or the pronunciation should be South African. A few students also indicated that they would like the audio or video content translated into the language of their choice.

Most students indicated that lecturers should use different modes of delivery for the learning content and different methods of teaching to cater for students with different learning styles so that the lectures can be more interesting for all students. Most students indicated that with the advances in technology lecturers could vary their modes of delivery as well as use varying methods of teaching.

Most students agreed that they should be given different assessments to cater for the various learning styles of LIS students. Students indicated that at present most of their tests and exams were written, with a few oral assessments and practical work and thus did not cater for all the different learning styles.

5.5.4.7 Innovative teaching and learning in LIS education

Most students indicated that they would like more of the course content, as well as methods of teaching and modes of delivery, provided in a digital format. Students wanted to learn database construction, designing websites and digital libraries. They argued that libraries are

now computer oriented and therefore LIS education should introduce more courses dealing with information systems and electronic management. All students indicated that they should be trained to adapt to working in the digital environment. Many students mentioned that LIS lecturers should be more creative in their teaching and use the advanced technologies in their teaching and thus motivate students in LIS education to use the technologies as well.

A few students wanted LIS educators to use social networking like Facebook and Twitter while two students said that they would not like to mix their social life with their studies and would not like their lecturers knowing their private matters. A few students indicated that they would like their course material available on their mobile phones.

5.6 Summary

Chapter 5 presented the findings of the study. The findings were based on data collected via a Web survey of LIS educators from nine universities in South Africa offering LIS education and training, interviews with LIS educators who indicated they used blended learning interventions, interviews with facilitators of blended learning from various higher education institutions and focus group discussions with LIS students exposed to blended learning interventions. Chapter 6 discusses the main findings of the study in relation to the aim and objective of the study and its critical questions, the theory framing the study, as well as the literature that was reviewed for the study.

Chapter 6: Discussion of Findings, Conclusions and Recommendations of the Study

6.1 Introduction

Chapter 5 presented findings based on the data that was collected with the use of the Web survey questionnaire, two sets of interview schedules and one focus group discussion schedule. LIS educators from nine higher education institutions that offer LIS education and training in South Africa participated in the Web survey, with selected LIS educators participating in semi-structured face-to-face interviews as well. Facilitators of blended learning from selected higher education institutions participated in semi-structured telephone interviews while LIS students from these higher education institutions participated in focus group discussions. This chapter discusses the salient findings relevant to the objective of the study and the critical questions that were generated to address this objective. In the view of the researcher's choice of pragmatism and interpretivism as epistemological lenses for the study, a hermeneutic approach is undertaken in understanding and discussing the four sets of findings. This is done from multiple perspectives and in the context of the theoretical framework underpinning this study as well as the literature that was reviewed.

The broad objective of the study was to explore the educational and pedagogical issues in blended learning for the development of a framework for designing and implementing blended learning in the delivery of LIS curricula in South African universities.

The critical questions generated to meet the objective were:

- What are the educational benefits of blended learning for LIS programmes in South Africa?
- What learning theories are used in the educational design and facilitation of blended learning interventions?
- What are the pedagogical benefits of blended learning for LIS programmes in South Africa?
- What teaching methods are used in the design and facilitation of blended learning interventions?
- To what extent do LIS programmes in South Africa currently use dialogue and discussion/face-to-face type delivery in LIS education?
- To what extent do LIS programmes in South Africa currently use online learning experiences?

- Do LIS programmes in South Africa currently make use of blended learning? If yes, what blended learning interventions are used?
- What are the theoretical and practical aspects that may be used in designing effective blended learning interventions for the delivery of LIS curricula?
- What effective blended learning framework may be developed for the meaningful delivery of LIS curricula in South African universities?

6.2 Discussion of findings

Understanding of the concept of blended learning is addressed first, since blended learning is a complex phenomenon. There are varying definitions and interpretations of the concept of blended learning. This adds to the flexibility of blended learning to be adapted to suit a particular teaching and learning intervention. It is also critical to clarify the position that this study has taken with regard to the definition of blended learning. The findings are then discussed in terms of the critical questions that were generated to address the objective of the study.

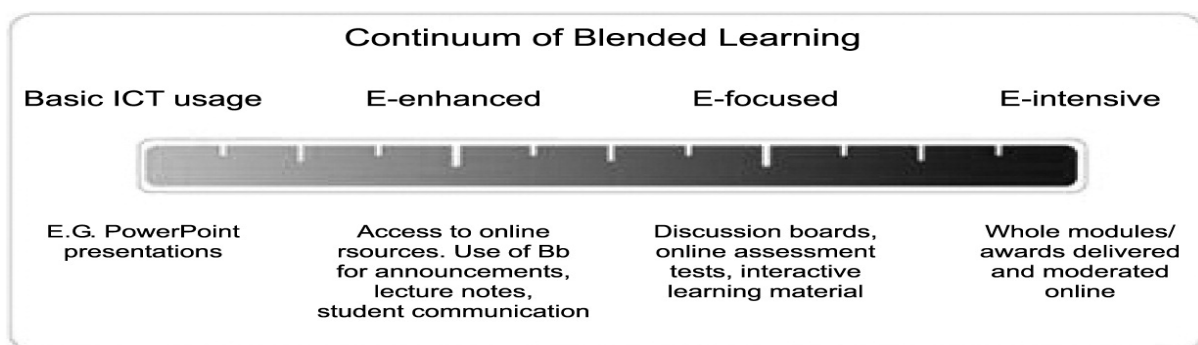
6.2.1 The concept of blended learning

Blended learning is a complex concept. No clear consensus on the understanding of the concept of blended learning emerged from the findings of this study. Fifteen (44%) of the 37 LIS educators in Web survey indicated that they used blended learning (that is, online and face-to-face interaction). In the face-to-face interviews that were conducted with these 15 LIS educators in the second phase of the study, three of these participants requested the researcher to define the concept blended learning. Four participants provided their definition of blended learning and three of these placed emphasis on the use of technology in blended learning. One participant focused, in this definition, on the different modes of delivery namely, face-to-face and online. The researcher ascertained during the interviews with LIS educators that the definition of blended learning was extended to include modes of delivery, methods of teaching and styles of learning. No clear guidelines emerged in terms of **what** (key components) were blended, the **degree** (how much of each component was used in the blend) and what criteria were needed for the learning to be regarded as blended. Allen, Seaman and Garrett (2007: 5-6) classify courses based on the amount of time that is spent on a particular mode of delivery. According to their classification scheme, blended courses have between 30% and 79% of the course content delivered online. Face-to-face instruction is classified as

those courses in which zero to 29% of the content is delivered online and fully online courses are defined as having at least 80% of the course content delivered online. Jones (2006) suggests a continuum of blended learning (refer to Figure 6.1) that can be used as a guideline to incorporate teaching and learning that is mediated by technology. The continuum identifies PowerPoint presentations, basic Web-facilitated resources (e.g. teaching material and announcements) using LMSs as indications of “basic ICT usage” and “E-enhanced” stages, respectively. The next stage with discussion boards, online assessments and interactive learning material also using LMSs, is “E-focused” and when online facilities are used completely for whole modules, this is regarded as “E-intensive” on the continuum (Jones 2006).

Figure 6.1

Continuum of blended learning



Source: Jones (2006)

The literature on the definition of blended learning concurs with this finding that there is no clear consensus on the understanding of the concept of blended learning. According to Driscoll (2002) there are many approaches by which blended learning can be attained. The first approach is using a combination or mixed modes of Web-based technology (live virtual classrooms, self-paced instruction, collaborative learning, streaming video, audio and text). The second is to combine various pedagogical approaches (for example, constructivism, behaviourism and cognitivism) to produce an optimal learning outcome with or without the use of instructional technology. The third is where any form of instructional technology (videotape, CD-ROM, Web-based training, film) is combined with face-to-face instructor-led training and, finally, the fourth is a mix of instructional technology with actual job tasks where a harmonious effect of learning and working is created. Graham (2004), drawing from a variety of sources defines blended learning as a combination of face-to-face and online

instruction, which is the most widely used definition in most of the literature on the subject. The researcher would like to reiterate that for the purposes of this study the definition by Heinze and Proctor (2004) was adopted, where blended learning is defined as learning that is facilitated by the effective combination of different modes of delivery, models of teaching and styles of learning, and is founded on transparent communication amongst all parties involved with the course.

The group that was most familiar with the concept of blended learning were the institutional facilitators of blended learning who had a clearer understanding of the concept of blended learning. This was ascertained in their responses to the questions on blended learning that were posed to them.

LIS students during the focus group discussions were provided with the Heinze and Proctor (2004) definition of blended learning referred to earlier. It constitutes a combining of online and face-to-face instruction. Although the definition of blended learning was provided to students in an information sheet (refer to Appendix E), a few LIS students still wanted the definition of blended learning clarified (as was the case with the LIS educators). LIS students saw blended learning as a combination of “variants”. LIS students’ use of the term “variants” indicated to the researcher that the students were not clear with regard to what the components of blended learning were. LIS students were not sure what the different modes of delivery, models of teaching and learning style comprised of. After revisiting the definition of blended learning during each focus group discussion with LIS students and further clarification on the modes of delivery, models of teaching and learning styles, all LIS students who participated in the focus group discussions agreed that they were exposed to varying degrees of blended learning interventions in their respective LIS programmes. This corroborates claims by their LIS educators in the Web survey that they used in blended learning in their respective programmes. Most students stated that they preferred both face-to-face as well as online interventions. A few, however still preferred face-to-face but realised that they had to embrace the new technologies considering that the LIS sector is now very much rooted in the digital environment. The modes of delivery mentioned by the LIS students who participated in the focus group discussions were primarily verbal-visual presentations using PowerPoint presentations; but for Focus Group One it was mostly self-instructional as these students were from a distance learning institution. All LIS students from the other five focus groups indicated that they were exposed to individual consultations with LIS educators. It was interesting to note that some of the LIS students found that they

communicated more effectively with educators in the one-on-one consultation sessions as they could discuss aspects of the curriculum that they did not understand and could therefore be guided in the right direction towards understanding the learning content.

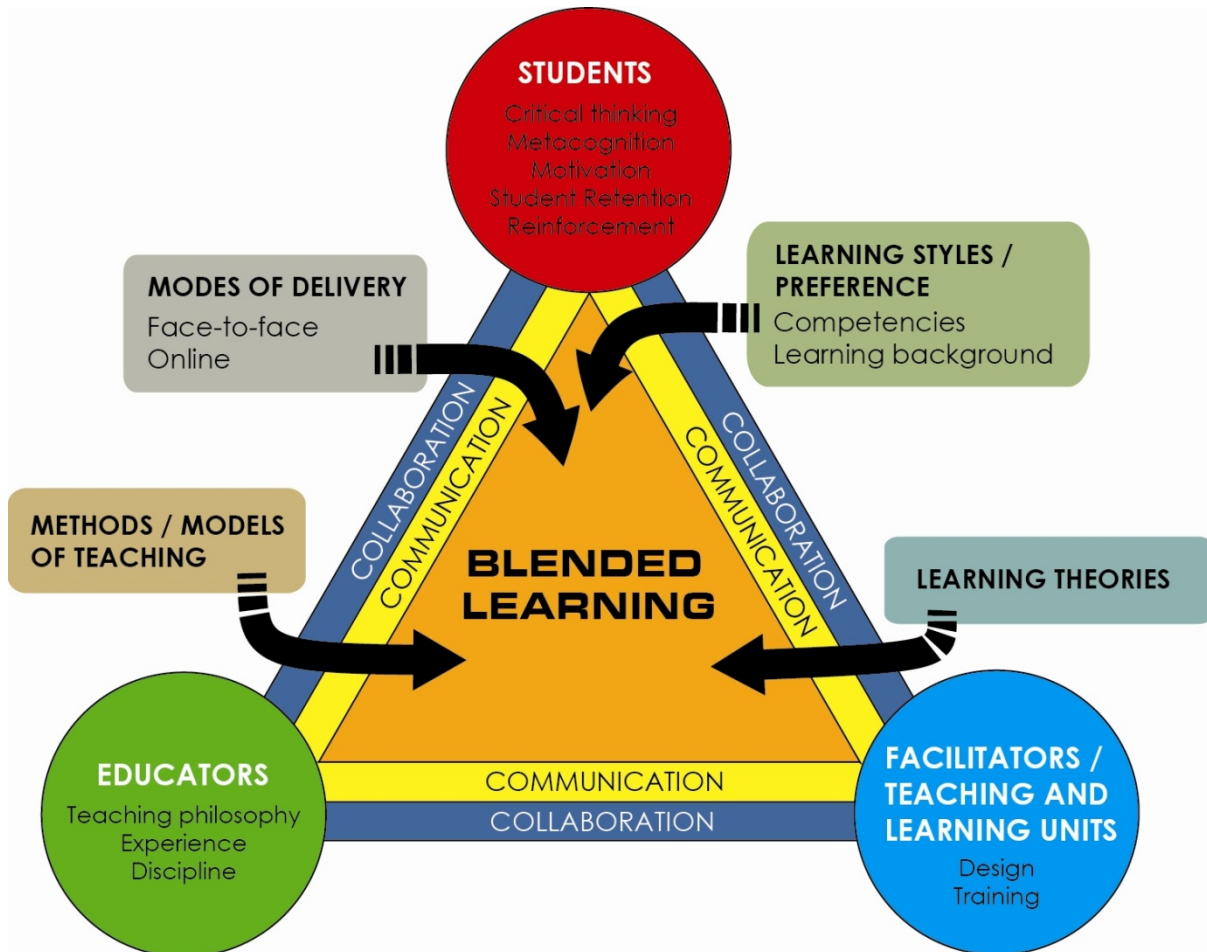
The findings show that there was a use of a combination or mix modes of delivery using face-to-face (lectures and seminars using Powerpoint presentations, group discussions, debates and consultations) as well as online (Web-based technology using LMSs, blogs, websites and podcasts). However, the pedagogical approaches that were used to produce the learning outcomes were not clear in the findings of this study. It was not clear whether the LIS educators consciously considered learning theories and the learning styles of students when designing and delivering instructional material. Felder (n.d.) states that although educators cannot design instruction to cater for all the learning styles, they need to strike a balance, making sure that the student's learning style preference is addressed to a reasonable extent during instruction.

The primary focus of this study was to explore the educational and pedagogical issues in blended learning in higher education institutions offering LIS education and training. The findings of this study indicate that the key parties in the blended learning process include LIS educators, LIS students and institutional facilitators of blended learning (institutional teaching and learning units) in the nine higher education institutions offering LIS education and training in South Africa. The different methods of teaching, modes of delivery, learning theories and learning styles and means of communication and collaboration were examined. All participants in the study (educators in the Web survey and in the interviews, institutional facilitators of blended learning as well as the LIS students in the focus group discussions) agreed that communication was one of the key benefits of using blended learning. Considering that this study has adopted the Heinze and Proctor (2004) approach definition of blended learning where blended learning is defined as learning that is facilitated by the effective combination of different modes of delivery, models of teaching and styles of learning, based on transparent communication amongst all parties that are involved with the blended learning interventions. It is vital that there is effective communication amongst all parties involved in blended learning interventions. In exploring the educational and pedagogical issues in blended learning in this study, the researcher found that Heinze and Proctor (2004) definition of blended learning does not include learning theories and collaboration amongst the parties in their definition of blended learning. This study therefore includes learning theories to the Heinze and Proctor (2004) definition of blended learning as

well as collaboration amongst all parties involved in blended learning interventions, thereby further developing the concept of blended learning. The concept of blended learning emanating from this study and the aspects of blended learning arising from this concept, are as depicted in Figure 6.2.

Figure 6.2

Concept of blended learning emanating from the study



6.2.2 Educational benefits of blended learning

One of the critical questions generated to address the study’s objective related to the educational benefits of blended learning. The literature lists some of the benefits of blended learning for higher education institutions as including facilitation of easier communication and interaction (Rohleder et al. 2008: 101); motivation and metacognition (Klein, Noe and Wang 2006: 674, 679); enhanced course delivery with improvement in cognitive and reflective skills (Pratt 2003: 4); improved retention and identification of ‘at risk’ students

(Hughes 2007: 350-351); improved pedagogy; increased access and flexibility and increased cost effectiveness (Graham 2004). The findings of this study with regard to some of the educational benefits of blended learning are be discussed in this section.

6.2.2.1 Benefits of face-to-face interaction

Both LIS educators and students surveyed indicated that they were most familiar with face-to-face interaction in teaching and learning. Most of the LIS students in the focus group discussions indicated that they preferred face-to-face interaction. They stated that one of the benefits of face-to-face interaction was that they could immediately clarify aspects of the lecture that they did not understand. LIS educators also stated that the main advantage of face-to-face interaction was that LIS educators could identify problems easily and misunderstandings could be sorted out immediately. Further, according to LIS educators, they are able to ascertain whether teaching is effective or not through visual and verbal cues during face-to-face interaction. LIS students also indicated that they remembered the content better especially when engaging in debates and discussions. Students also claimed that face-to-face interactions gave them the confidence to speak in class. Some students found that the consultation sessions with lecturers were very useful as the lecturer could go into detail explaining the learning content that they did not understand so that they could be guided in the right direction. Similarly interviews with LIS educators revealed that face-to-face interaction allows for personal interaction with students and they are therefore able to get to know their students better and are able to identify their strengths and weaknesses. LIS educators also indicated that LIS students understood content better with face-to-face interaction, especially in teaching cataloguing and classifying. These findings were supported by Sweeney, O'Donoghue and Whitehead (2004: 312) who assert that most higher education academic staff still rely heavily on lectures and seminars as the main and time-honoured means of disseminating knowledge and maintaining some sense of staff/student contact.

LIS students also indicated in the focus group discussions that technology should be included in the present culture of face-to-face teaching and learning so that the teaching and learning experience would be more interactive. The request by LIS students for more technology to be included in LIS teaching and learning is also reflected in the literature - Keller (2008: 182) points out that combining technology based delivery systems with classroom delivery offers opportunities to integrate motivational support strategies in novel ways. This would afford LIS educators the opportunity to introduce innovative teaching and learning in LIS education

and training. They also requested more visual representation of content included in the use of blended learning in LIS education and training. This supports the study's finding that most LIS students are visual and verbal learners (see Section 5.5.4.6 of Chapter 5).

The next section discusses the benefits of online learning emanating from the study after which the two sets of benefits will be brought together in the context of the blended environment.

6.2.2.2 Benefits of online learning

In online learning, technology enables the students not to be restricted to the transmission mode of pedagogy which is often the dominant practice in higher education classrooms. Students are able to find more information by themselves and join communities and discussions where facts, information and knowledge are challenged and tested. Students are able to engage in dynamic, interactive and reflective online environments, with rapid feedback and multiple interfaces (Jones 2007: 3).

Of the LIS educators surveyed 33% indicated the biggest advantage of using LMSs in online learning is that it is easier to communicate with students and easier to distribute course material to large groups of students. LIS students concurred by pointing out that online learning enabled them to have easier access to their lecturers in terms of communicating with them electronically via e-mail, sms, and the LMS. Students were also glad that they did not have to purchase many textbooks as resources were available online with 24/7 access to these resources. Another advantage cited by LIS educators is the direct interaction and instant connection with the students which results in faster turnaround responses particularly in the distance learning environment. It is evident that online teaching and learning is valuable for interaction and connection between educators and students especially in the distance learning environment.

Both LIS educators and students indicated that submission and feedback of assessments are better to administer and submit online with more effective feedback online. According to Mason (1998: 2) the online environment also fosters collaborative activities and assignments. Peers commenting on work are also made possible. The ease with which students can submit assignments electronically and take self-tests and examinations online has led to many institutions exploiting the technology to globalize their courses. MOOC is a fast developing educational model that is gaining popularity in higher education. MOOC offers opportunities

for massive grouping of students collaborating and producing content on a variety of platforms that include learning management systems, social media and websites using interactive online forums that can involve a number of students in peer-to-peer discussions as well as access to audio and video lectures and course material in online format (Jones 2014; Mallon 2013: 43). Most of the courses are completed at the students own pace, without formal assessments or deadlines and participants in some instances receive a certificate of completion after completion of the course (Mallon 2013: 47). Online assessments can also be supported by computer conferencing. The findings of this study, however, were silent on the use of peers to comment of work submitted. This is an area that could be explored by LIS educators as this is an activity that could foster an environment that provides increased learner control, self-directedness, and that which requires students to take more responsibility for their learning.

LIS students in the focus group discussions indicated that they preferred the audio and video resources employed in blended learning. Findings from the Web survey with LIS educators indicated that 21% of LIS educators surveyed used some audio resources such as iPods and CD-ROMs which include primarily audio resources but could include video as well. Interviews with LIS educators show that LIS educators are increasingly employing information and communications technologies (ICTs) in the teaching and learning environment in LIS education and training. The use of ICTs in teaching and learning enables LIS educators to offer interactive teaching and learning in education and training. Pang (2008: 5) reiterates that students are able to reinforce their classroom learning with access to audio, video, or other media-driven learning tools. According to Garrison and Kanuka (2004: 99) Web-based conference systems and the support for audio and video Web provide an integrated environment for delivering course content and participant interaction.

All the benefits of face-to-face interaction and online learning (as discussed in Sections 6.2.2 and 6.2.2.3 of this chapter, respectively) will apply to the blended learning environment, combining the best of 'both worlds'. Furthermore, when LIS students were asked about the benefits of blended learning, in addition to the benefits already discussed in Sections 6.2.2.2 and 6.2.2.3, they indicated that when prior readings, requested for lectures and class discussions, were posted on the LMS, this helped them to understand the content better as they had already familiarized themselves with the content. LIS students also indicated that this prior posting better equipped them to ask questions on aspects they did not understand.

They also mentioned that with e-resources, there is the benefit of the content always being up-to-date and accessible from anywhere, at any-time and from a single platform using the LMS. Indeed, the findings of this study as well as the literature indicate that the benefits of the blended learning environment do abound.

6.2.2.3 Critical thinking

The facilitation of critical thinking and creative and complex thinking skills need to be fostered in higher education institutions particularly in the current information age. Blended learning offers the possibilities to create transformative environments that can effectively facilitate development of these skills. Blended learning lends itself to both independent and group activities (Garrison and Kanuka 2004: 99). LIS educators interviewed were of the view that higher education students that they taught were generally lacking in critical and reflective thinking skills and many (47%) agreed that LIS educators needed to foster critical and reflective thinking. Yet the interviews with LIS educators revealed that they did not consciously engage LIS students in critical, creative and complex thinking practices. Two of the 15 LIS educators interviewed indicated that ICTs were vital in making teaching and learning more interactive. However these LIS educators did not elaborate on what blended learning practices were used to foster creative, critical and complex thinking. Sadly, most of the LIS educators interviewed avoided discussion on the practices that engaged in higher-order learning such as critical, creative and complex thinking. However some did indicate that they included reflective thinking practices in their assessments. Reflective thinking helps students to become more metacognitively aware and therefore should be incorporated in assigned readings and assignments (Tanner 2012: 117).

The Community of Inquiry (CoI) framework advocated by Garrison and Akyol (2009: 23) can be used to guide the use of instructional technologies in “creating and sustaining deep and meaningful learning through reflection and discourse in online and blended learning environments”. The cognitive presence element of CoI exists in an “environment that enables learners to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry” (Garrison, Anderson and Archer 2001: 11). The main contribution of the cognitive presence is its “affordance of collaborative information discovery and creation” (Garrison and Akyol 2009: 24). Enabling students in higher education to construct meaning and engage in reflection and critical discourse could

contribute to establishing higher order thinking skills. Blended learning is a useful tool to promote such reflection and critical discourse.

6.2.2.4 Reinforcement

Many academics in higher education use technology to supplement their live in-class lectures and activities thereby building on the foundational skills that are presented in class (Pang 2008: 3). Instructional material presented in the face-to-face classroom environment can be downloaded onto the online classroom and students can consult the instructional material repeatedly to reinforce in-class lectures and this could be reviewed at any time. Only two LIS educators interviewed mentioned that reinforcement could be achieved with the use of blended learning by using various modes of delivery of the learning material. Podcasts were used by these educators so that students could access the learning content as many times as they wished. LIS students indicated that although they understood the content better with the face-to-face interaction, they would like these interactions recorded and downloaded on the LMS so they could revise the work at any time and did not have to miss out on work that was covered in the lesson (if they had missed class).

6.2.2.5 Student retention

Hughes (2007: 349-351) observes that improving student retention and identifying 'at risk' students are issues facing higher education institutions. He concludes that "blended learning with increased support and visible tutor monitoring can improve module retention by motivating learners to complete coursework on time". If 'at risk' students could be identified on time, a student retention plan could be implemented. Student retention refers to retaining students who have enrolled at a particular institution (for this study the researcher refers to higher education institutions). Student retention is important for the financial stability of the institution as well as the quality of the educational experience of students. Only two of the 15 LIS educators commented on the use of blended learning as a means of attaining student retention. This lack of comment on student retention is worrying as those LIS educators who spoke to the student retention issue indicated that intake in LIS programmes tend to be low and therefore LIS programmes need to be more interesting in order to retain students. The LIS students who participated in the study indicated that the use of blended learning in the delivery of the LIS curriculum made them feel more prepared for the LIS sector particularly with regard to using the current advances in technology. They also indicated that the use of LMSs helped them to understand the course content better. This indicates that blended

learning has the potential, via the use LMSs, to deliver teaching and learning activities that support students. This support could help with student retention.

6.2.2.6 Motivation

LIS educators interviewed indicated that they used varying teaching methods and modes of delivery to motivate students. They also used games and attached prizes to learning activities to motivate students. Fifty percent of the LIS educators interviewed felt that educators should have an educational theory background to enable them to motivate students. They also mentioned that the retention of students could improve if students were motivated and they would also be more likely to complete their qualifications which would improve throughput. The use of instructional technology is one of the means of motivating students to sustain students in higher education to higher levels of study (Aflip 2014: 36). This could also lead to higher retention rates of students in higher education. Klein, Noe and Wang (2006: 693) agree that learners in the blended learning environment are more motivated to learn, they engage in more meta-cognition and they achieved higher course grades than learners in the classroom condition. Klein, Noe and Wang (2006: 693) reiterate that the technology used in blended learning facilitates more control over when and where learning takes place and provide students with a variety of tools to facilitate learning.

6.2.2.7 Collaboration

The findings from this study show that the majority (62%) of LIS educators in the Web survey indicated that they were not engaged in any collaborative teaching and learning interventions related to blended learning within their institution or with other institutions while an encouraging number of nine LIS educators (24%) were engaged in such collaboration. This collaboration took various forms with other departments within the institution, with other institutions in Africa and on an international level (refer to Section 5.5.1.12 in Chapter 5).

Allan (2007: 18) suggests that online communications provide an important channel for information professionals to communicate with colleagues and to network across the profession and with other professions. Information professionals also use virtual communication tools to exchange ideas and information, to work together on common themes or issues and to work collaboratively in teams. The nature of the collaborative teaching and learning interventions was only elaborated on by six of the nine LIS educators

who affirmed in the Web survey that they were engaged in collaborative interventions. Three of the LIS educators mentioned in the Web survey that they were involved with collaborative teaching and learning interventions with other departments within their institutions. This collaboration comprised of co-teaching and offering workshops (refer to Section 5.5.1.12 in Chapter 5). However the blended learning nature of the collaboration was not clear. The only hint of blended learning was evidenced in the case of international collaboration using mixed mode of delivery via online and contact sessions in a Masters in Information Technology Programme at one of the higher education institutions that participated in the study. Sadly, though there was no collaboration amongst the various LIS schools/departments/programmes offering LIS education and training in South African. Chaudhry (2007: 30) opines that collaborative projects and other cooperation among LIS programmes could be helpful in improving the quality of LIS education. The use of new technologies also makes it more practical that teaching and learning materials are shared to save time in course development and content creation.

On a micro level, according to Gau (2012: 93) collaboration can take various forms in a blended learning environment. This collaboration can occur between student and student, student and content and, student and educator. Educators can selectively release and use discussion topics in three ways: as the basis of small-groups, face-to-face discussions; as topic ideas for compositions; or as topics for online discussion postings. The purpose of collaborative tools at this micro level is to stimulate class discussion and to encourage feedback and insights from engaging with others (Gau 2012: 93). LIS educators could consider consciously engaging student to student, student and content and student and educator collaboration in the blended learning environment. It is encouraging to note LIS educators citing in the Web survey that using LMSs fostered collaborative work with a large community base using open source LMS software; LMSs are great for constructivist teaching; the use of LMSs contributed to faster turnaround response time for feedback on assessments and response to correspondence from students.

6.2.2.8 Educational benefits of blended learning for LIS programmes in South Africa

The findings of this study show that the dominant mode of instructional delivery for LIS education in South Africa is face-to-face interaction. Both LIS educators and LIS students agreed that they were most familiar with face-to-face teaching and learning in LIS education

and training at the nine higher education institutions offering LIS education and training in South Africa. LIS students stated that they preferred face-to-face interaction as this offered the security of immediately clarifying aspects in the lecture content that they did not understand as well as offering personal interaction, which both LIS students and LIS educators value and are most familiar with. However technology has infiltrated our daily lives in the form of communicating via e-mail and social media etc. Technology has also had a significant impact on the LIS workplace where libraries and information agencies have introduced communication with users via e-mail and social media and are offering Internet services as well as online resources such as e-journals, e-books and digital collections. In this study both LIS educators and LIS students agreed that the biggest advantage of online learning is that it fosters easier communication. Considering the benefits of both face-to-face interaction and online learning (as discussed in Sections 6.2.2.2 and 6.2.2.3 of this chapter), it would therefore make sense for LIS education and training to adopt blended learning which could assist LIS graduates to be more prepared for the current LIS work environment.

Blended learning also offers possibilities to transform the teaching and learning environment in LIS education and training by including ICTs for interactive teaching and learning by using different modes of delivery and methods of teaching while taking cognizance of the various learning theories and learning styles. Although there was no forthcoming discussion from LIS educators interviewed, of blended learning practices in their blended learning delivery that could be used to foster critical and reflective thinking, they agreed that critical and reflective thinking should be fostered in LIS education. Blended learning could be at the forefront of transformation in teaching in LIS education and training and in the process use made of the CoI framework which “integrates social, cognitive and teaching elements in a way that will precipitate and sustain critical reflection and discourse” (Garrison and Vaughan 2008: 8). Furthermore, the use of blended learning in LIS education and training could help in the reinforcement of course content which could together with the use of different methods of teaching and modes of delivery to motivate students, could contribute to the retention of students in LIS programmes as well as towards improving the throughput rate in LIS education and training in South Africa.

6.2.3 Learning theories and learning styles that can be used in the educational design and facilitation of blended learning interventions

This section discusses the findings relating to learning theories and learning styles and the implications of these findings for designing and implementing blended learning interventions in LIS education and training. In designing and implementing blended learning interventions it is imperative that educators have an understanding of the learning theories and the learning styles or preferences of students in order to be able to afford students a variety of teaching methods and modes of delivery. Learning theories could be aligned to the learning styles of the students for optimum student learning.

6.2.3.1 Learning theories

The three broad learning theories, namely, behaviourism, cognitivism and constructivism are the main learning theories that were used to inform this study as these theories are most often utilized in the creation of instructional environments (Siemens 2004). It was encouraging to note that most LIS educators (67.6%) indicated in the Web survey that they used a combination of learning theories (behaviourism, cognitivism and constructivism). However when LIS educators were asked in the Web survey to comment on the value of incorporating a particular or a combination of learning theory/ies in their teaching, only 23 (of the 37) LIS educators responded. Four of the 23 who responded to this item alluded to using a combination of learning theories to address the diversity of the student population while three of the 23 LIS educators indicated that the subject content and level of the module determined what learning theories they used. While addressing the diversity of the student population was not made more specific, it could be taken to refer to the different population groups, learning styles, levels of literacy etc. of the students. Another three of the 23 LIS educators indicated that incorporating learning theories in their teaching and learning improved learning and incorporating principles of learning theories into the assessments gave the assessments more value to teaching and learning in LIS education and training. Three of the 15 LIS educators interviewed indicated that they used the constructivist approach to teaching and learning but did not elaborate on the value of using this approach. However, comments listed in Table 5.29 of Chapter 5 show that some LIS educators interviewed are aware of the value of incorporating learning theory/ies in teaching and are using cognitive theory as well as connectivism to inform their blended learning interventions.

Comments such as “multi-media strengthen the understanding of content especially when English is the student’s second language (the message is better understood by showing a picture or video)” pertains more to learning styles rather than learning theories. However it should be noted that learning styles could be aligned to the learning theories used.

One educator admitted in the Web survey when asked to comment on the value of using a particular or combination of learning theories/ies, having never formally studied theories of learning but agreed that professional insight into educational theories needed to be sought. This was also evident when perusing the academic qualifications of LIS educators. None of the LIS educators surveyed indicated having any qualification pertaining to education or teaching (refer to Figure 5.3 in Chapter 5). Minishi-Majanja (2009: 156) agrees that very few undergo any training to become university educators and that most teaching skills are obtained on the job and also that few LIS educators have experience in a “technology-infused environment, to enable them to perceive the best way to teach”.

Furthermore, interviews with LIS educators revealed that they do not sufficiently address the issue of how learning theories and learning styles inform the educational design and facilitation of blended learning in their respective learning programmes. A recurring response (33%) among LIS educator interviewees seems to have been that they were not trained as educators and therefore did not have the necessary educational theory background to do or comment on learning theories and learning styles. A further three of the 15 LIS educators admitted to not doing conscious research on learning theories. This could explain the less than satisfactory response to this particular item on learning theories and learning styles.

Three of the 15 LIS educators interviewed indicated that they received assistance in design of course material from their institution’s teaching and learning unit. Facilitators of blended learning indicated (via telephonic interview) that they offered short courses on facilitation of teaching and curriculum development. According to them learning theories only comprised of a small portion of these short courses. A majority of the LIS educators (83%) in the Web survey indicated that their institutions had special units in their institutions that assisted in educational support for educators. Most of this support was in the form of workshops and seminars relating to teaching and learning in higher education. The names of these units (refer to Table 5.10 in Chapter 5) indicate an emphasis on technology with only a few emphasising curriculum, teaching and learner development. Telephonic interviews with facilitators of blended learning revealed that learning theories are covered in the induction

sessions for new staff. They also indicated that the educators did not want them to cover too much theory relating to learning theories and learning styles. They simply wanted to learn how to use LMSs. They also indicated that lecturers did not have time to consider learning theories and learning styles. Educators have the option to register for postgraduate education qualifications such as the Postgraduate Diploma in Higher Education Training.

This study explored the learning theories that were used in the educational design and facilitation of blended learning interventions. The findings in the Web survey show that most of the LIS educators (68%) used combinations of learning theories in teaching and learning interventions in LIS education and training. Seven of the 37 LIS educators revealed in the Web survey that they used constructivism in their teaching. Only three of the 15 LIS educators interviewed indicated that they used the constructivist approach to inform the educational design and facilitation of blended learning in their learning programmes. The constructivist approach which is a learner-centred approach is advocated for blended learning interventions in the literature (refer to Section 2.2.3 in Chapter 2). In the blended learning environment, the constructivist paradigm uses a mixture of methods of teaching and modes of delivery in the classroom environment and visual media in the electronic environment to aid knowledge construction and reinforcement. As such, multimedia designs and information retrieval concepts are central components of the constructivist learning space (Rodrigues 2002:49). Cooner (2005: 375-376) argues that a constructivist approach focusing on knowledge construction as opposed to knowledge transmission is better in preparing students to gain skills that are required to work in situations of diversity. And as indicated earlier, LIS educators in the Web survey did reveal that they used a combination of learning theories to address the diversity of the student population at South African universities.

LIS educators who were interviewed were prompted to outline the benefits of aligning the learning theories and learning styles with the learning outcomes of their courses in the educational design and facilitation of the blended learning interventions in their respective programmes. It was evident that many LIS educators were not trained as educators and therefore did not have the necessary educational theory background to incorporate aligning learning theories and learning styles with the learning outcomes of their courses in the educational design and facilitation of the blended learning interventions in their respective programmes. Hence facilitators in the specialized educational support institutional units have a vital role to play in assisting educators to incorporate learning theories and learning styles in the educational design and facilitation of blended learning interventions.

6.2.3.2 Learning styles

Only half of the LIS educators in the Web survey indicated that they did take students' learning styles into consideration, whilst the other half did not (refer to Figure 5.16 in Chapter 5). However, LIS educators could not reveal in the interviews how learning theories and learning styles informed the educational design and facilitation of blended learning interventions in their respective programmes.

Interviews with LIS educators showed that five of the 15 used different approaches for different assessments to cater for the various learning styles of students while four of the 15 LIS educators catered for verbal and visual learning styles. LIS students indicated in the focus group discussions that most of them were visual and verbal learners. Students claimed that they find it easier to recall content when it is presented visually or audio-visually in video recordings. This shows that LIS educators should be aware of the different learning styles and incorporate them by using different modes of delivery and a variety of assessment approaches. Only two LIS educators interviewed indicated that they used different modes of delivery. Facilitators of blended learning also indicated that lecturers needed to accommodate the various learning styles due to the diverse group of students in South African higher education institutions. One institution indicated that the teaching and learning unit at the institution has set up learner profiles in order to be able to cater for the learning styles of all students. However LIS educators revealed in the interviews that they faced challenges in incorporating students' learning styles. These challenges include language as a barrier in catering for the different learning styles; having no time to ascertain learning styles (two of eight facilitators agreed that lecturers claimed that they did not have time to consider learning theories and learning styles); and having no confidence that the learning style inventories work. Six of the eight facilitators of blended learning who were interviewed and responded to the item on learning theories and learning styles emphasized the importance of taking into consideration learning theories and learning styles when designing and implementing blended learning interventions.

A correlational study of learning styles and learner satisfaction done by Henry (2008: 410) indicates that the visual side of the visual-verbal dimension of students' learning styles was positively correlated to satisfaction with themselves as learners in a blended course delivery mode and negatively correlated to satisfaction with the classroom environment in the context of a traditional classroom delivery mode. This could be taken into consideration in informing

the educational design and facilitation of blended learning interventions. It must be noted, however, that the validity of using learning styles inventories (of which some LIS educators surveyed were skeptical about), has also been challenged (Pashler et al. 2008: 116). However the researcher is cognizant of the fact that addressing the learning needs of students is complicated as several variations such as prior knowledge, experience and skills level need to be factored into the learning style equation (Felder 2010: 5). Notwithstanding this, the learning needs of students should be addressed. The importance of applying learning styles in education delivery is to match students' preferences with the design and type of teaching instruction in order to possibly improve students' satisfaction and other outcomes such as students' performances.

A review of learning theory literature suggests that learning style and preferences influence the effectiveness with which students learn; therefore knowledge of students' learning styles and preferences can assist educators in choosing the correct or most appropriate methods of instruction for students (Saeed, Yang and Sinnappan 2009: 98). It is therefore important when designing blended learning instructional material that educators and facilitators of blended learning should cater for the different learning styles, which also needs to be aligned to the appropriate learning theories.

6.2.4 Pedagogical benefits of blended learning

This section focuses on the discussion of findings with particular reference to the benefits of blended from a pedagogical perspective. The educational benefits discussed in Section 6.2.2 in this discussion chapter examines the teaching and learning environment in totality with a focus on the students while the pedagogical aspect of the study (discussed in this section) focuses on the educator and the process of teaching particularly in the higher education context (albeit, sometimes a small degree of overlap is unavoidable).

6.2.4.1 Transformation in teaching

Interviews with LIS educators indicated that a major change in teaching was in the modes of delivery where multiple modes of delivery are now being applied in teaching practices. A significant 33% (or one-third) of the LIS educators interviewed indicated that their communication with students which was previously face-to-face has become online. The availability of virtual communication tools like e-mail, discussion lists, bulletin boards, online chat and Web conferencing and videoconferencing has revolutionized teaching and

learning and has led to the development of e-learning (Allan 2007: 19). Second generation virtual communication tools, also referred to as Web2.0 or social-networking software, are being used regularly by millions of people. Social networking is concerned with individuals making connections with others using Internet-based tools such as wikis, weblogs and personal sites such as Twitter, MySpace, Facebook and Flickr.

LIS educators interviewed indicated that there has been a shift in the teaching and learning environment from human interaction to computer interaction with an increased focus in information and communications technologies (ICTs).

6.2.4.2 Teaching with technology

LIS educators surveyed indicated that they had access to data projectors, laptops, blackboards and whiteboards. Almost half of the LIS educators interviewed (47%) indicated that they use a lot more technology, especially ICTs, than previously in their teaching and learning. Four of the 15 LIS educators interviewed indicated that some students were reluctant to use technology in teaching and learning environments. Contrarily focus group discussions with LIS students revealed that students felt that libraries are now computer orientated and therefore LIS education should introduce more computer orientated courses. LIS students also indicated in the focus group discussions that they would like technology to be used in teaching and learning so that they could become familiar with the technology. It is encouraging to note that students have the foresight to surmise that if the LIS sector is deeply rooted in the digital environment, then they, as LIS students need to embrace technology to be better prepared for this environment. There seems to be some reluctance, on the part of LIS educators, to using technology in teaching as almost half of those interviewed indicated that the teaching process was interrupted especially with those students that struggled with using the technology or when the technology was too slow or did not work. In fact two of the 15 LIS educators interviewed admitted that some LIS educators were reluctant to use technology in teaching and learning. The reason for this could be that students and educators are not familiar with the technologies and software used in teaching and learning at their institutions. Alternatively, it could also be technophobia (fear of technology) on the part of the educators, especially older educators. Hence training and support is needed in the use of the technologies being currently used.

Many students attending South African universities come from schools that are located in rural areas or disadvantaged backgrounds. Hence, they are required to adapt to a new

environment that is more time-conscious, structurally complicated and more technology orientated. If students do not relate learning to their interests and abilities or when they do not see learning as a continuous process, instruction can become difficult (Wole 1995: 72). The findings of this study from the focus group discussions with LIS students, however, revealed that LIS students wanted technology to be used in teaching and learning so that they would be prepared for the technology oriented LIS environment. This need finds support in the literature where Minishi-Majanja (2009: 148) asserts that LIS education and training in Africa has the responsibility to provide qualified staff for the library and information sector and to ensure that LIS graduates have the competencies that “align the profession with current trends and perspectives”.

6.2.4.2.1 Support for teaching with technology

A majority (82.8%) of the LIS educators in the Web survey indicated that their respective institutions provided educational support for teaching staff. This support is usually provided by the teaching and learning units at their respective institutions. These units assist in training academics to design teaching and learning interventions, to develop blended learning interventions, and assist with curriculum development using Web-based teaching and learning. This support mainly comprised of workshops and seminars on LMSs and other Web-based teaching and learning interventions, teaching methodologies and various other training interventions for facilitation of teaching and learning (refer to Section 5.5.1.8.3.1 in Chapter 5). The researcher attempted to probe further into the nature of the support in interviews with LIS educators. Almost half of them (47%) indicated that they used student-centred approaches but did not elaborate on the approaches used. They mentioned that a lot more technology is being used in teaching, including online communication. At the same time six (40%) of the 15 LIS educators interviewed indicated that despite the support for teaching with technology some LIS educators are still reluctant to use technology in teaching and learning in LIS education and training, confirming the reluctance mentioned in Section 6.2.4.2 of this chapter.

Most of the LIS educators (87.5%) who indicated they had computer facilities, also mentioned, that the computer facilities had been upgraded to handle the latest technologies. A majority of the LIS educators surveyed also indicated that their institutions provided Internet access to their students. This is encouraging as this would promote the facilitation of the online aspect of blended learning. Although nearly half of the educators surveyed (45.7%)

indicated that their students did not have access to computers and the Internet out of campus, a significant 31.4% of the LIS educators surveyed were not sure if their students had such access. LIS educators also indicated that the modes of delivery and communication with students had changed from face-to-face to online. Notably, majority of LIS students in their focus group discussions indicated that the biggest challenge they faced with the use of blended learning was the cost of purchasing personal computers, after-hours access to the Internet and Internet connectivity being very slow. In order for blended learning to be effective, it is imperative for educators to be aware of the resources that students have in order to implement teaching and learning using technology and to ensure that students who do not have access to computers and the Internet are not disadvantaged.

6.2.4.2.2 Challenges with the use of technology in teaching and learning

LIS educators interviewed identified some of the challenges that they encountered in the use of technology in teaching and learning. One of these was that students did not attend classes if the notes were available online. LIS educators could ensure that class registers are taken and selected notes could be posted only after the lecture. Students also tended not to read the lecture notes and readings that were available online as prior reading for lectures. With this challenge LIS educators could inform students that they will be assessed for contribution to the discussion of the online readings. Students are more inclined to complete prior readings if they are made aware that it contributes to their assessments. Some students were not familiar with the software used and therefore did not use it, according to findings in this study. LIS educators in the Web survey indicated that the computer literacy levels of students varied in the different subjects that they taught and across the levels that they taught. LIS educators (33%) who taught first level subjects indicated that the computer literacy levels of these students were generally poor. Students in the focus group discussions admitted that they struggled with using the technology and wanted training in the systems that are used for teaching and learning at their institutions. Here again, as in Section 6.2.4.2, the enthusiasm of LIS students in embracing technology is evident. Institutional facilitators of blended learning indicated that training in using educational technologies such as LMSs were covered during orientation sessions when students entered university. Perhaps this is not sufficient for the students because students are already overwhelmed during orientation adapting to their new environment. More training at a time of need is likely to be more beneficial.

Further challenges related to the use of blended learning as cited by the LIS students in their focus group discussions (and mentioned earlier) included cost implications in acquiring personal computers, after-hours access to the Internet and the Internet connection being very slow. As mentioned before, nearly half of the LIS educators in the Web survey indicated that their students did not have access to computers and the Internet off campus while almost a third of them were not sure whether students had such access. In the context of blended learning, this is indeed a concern as the advantage of having 24/7 access to instructional content, sadly, will not apply to students who do not have access to computers and the Internet off campus. Hence challenges relating to affordability, access and slow connection need to be attended to by the institution for the implementation of blended learning interventions to be successful.

6.2.4.3 Number of years of teaching and its impact on teaching methods

A significant number of LIS educators in the Web survey (34.4%) indicated that they have been teaching for more than 20 years with five of these being in their current position for more than 20 years. This longevity could be attributed to the fact that LIS is a specialized field of study with most LIS educators possessing qualifications in the discipline of Library and Information Science/Studies (refer to Figure 5.4 in Chapter 5) and the fact that LIS programmes or departments have relatively small staff complements (refer to Table 5.2 in Chapter 5). Just under half (refer to Table 5.33) of the 15 LIS educators interviewed indicated that the number of years they have been teaching has impacted on their teaching methods (unfortunately, they did not elaborate on the nature of the change in their teaching methods) while three of the 15 LIS educators interviewed were not sure if their number of years of teaching has impacted on their teaching methods. The latter might be a pointer to the fact that some LIS educators may have become too comfortable in traditional teaching methods and do not reflect on whether the teaching methods they are using are relevant for the current higher education environment. Some even mentioned that they were comfortable in 'tried and tested' methods of teaching and did not want to change now that they were close to retirement. It is critical that LIS educators are aware of what LIS students want from their learning experience. LIS students in the focus group discussions indicated that they wanted LIS educators to be more creative in their teaching methods and to use advanced technologies in their teaching and thus motivate them to use the technologies as well. Most LIS students wanted LIS educators to use social networking tools such as Facebook and Twitter with the exception of the odd one or two who did not want to mix their social lives with their studies

and did not want to ‘let their lecturers into their private lives’. The need for educators to embrace trends in the learning process is supported in the literature where Onyanha and Minishi-Majanja (2009: 108) assert that LIS education institutions have the responsibility to ensure that LIS graduates have the competencies that align the LIS profession with current perspectives and trends.

6.2.4.4 Pedagogical benefits of blended learning for LIS programmes in South Africa

The findings of this study show that one of the major benefits of blended learning in LIS education and training is the use of multiple modes of delivery in teaching and learning. The pedagogical dimension in Khan’s Octagonal Framework (Singh 2003), addresses a scenario where all learning goals in a given programme are listed and the most appropriate delivery method is chosen. These guidelines will assist and sensitize the creators of blended learning interventions (educators and facilitators of blended learning) to align learning goals with the mode of delivery.

The mode of communication between LIS educators and their students has changed from being previously predominantly face-to-face to online. There has been a shift in the teaching and learning environment from human interaction to computer interaction with an increased focus on the use of technology, especially ICTs. Pang (2008: 3) agrees that many educators in higher education use technology to supplement their live in-class lectures and activities thereby building on the foundational skills that are presented in class. Furthermore, instructional content presented in the face-to-face classroom environment can be downloaded onto the online LMSs where students can consult the instructional content repeatedly to reinforce in-class lectures. This could contribute to the retention of LIS students as well as to the throughput rate for LIS programmes in higher education institutions in South Africa.

Some LIS educators showed reluctance in using technology in teaching and learning in LIS education and training. Training and support needs to be provided in the use of current technologies for teaching and learning in higher education. Also LIS educators need to take cognizance of the needs of the LIS students who want more creative and interactive teaching methods and the use of advanced technologies so that they would be better prepared for the technology oriented LIS workplace environment. LIS educators in using blended learning should mix teaching methods with the delivery formats where the pedagogical strategies should be maximized when technology is integrated with classroom based activities. Singh

(2003) emphasizes that the pedagogical dimension is concerned with the combination of content that has to be delivered (content analysis), the learner needs (audience analysis), and learning objectives (goal analysis). Using blending learning in teaching and learning in LIS education and training will benefit LIS educators as well as LIS students towards becoming familiar with current technologies. LIS educators are fortunate to have institutional teaching and learning units that offer support to educators to develop blended learning interventions. LIS educators should take advantage of this support in developing and implementation pedagogically sound blended learning interventions in LIS education and training at South African higher education institutions. Pang (2008:5-6) emphasizes that pedagogy should be the force driving the instructional design of blended learning interventions and that when using technology in a blended learning environment, one needs to identify the constructs of the pedagogy that will inform the design of the instruction and also create a meaningful learning environment.

The challenges that LIS educators face in the use of technology in teaching and learning in LIS education and training which are highlighted in Sections 6.2.4.2.2 and 6.2.4.3 of this discussion chapter should be taken into account when developing and implementing blended learning interventions. Educators also need to be realistic about student abilities and preferences and to be flexible in the use of various pedagogical models that facilitate meaningful learning in a blended environment (Pang 2008: 7). Pedagogically sound blended learning interventions have the potential to transform teaching and learning in LIS education and training at South African universities.

6.2.5 Teaching methods used in the design and facilitation of blended learning interventions

There are a variety of teaching methods and models. This section discusses the findings relating to the teaching methods that are used in LIS education and training that are applicable to the design and facilitation of blended learning in the higher education context. It is important to note that there exists some degree of overlap between the teaching methods used and the mode of delivery of the teaching methods, namely, face-to-face and online.

6.2.5.1 Lecture method

Sixty-eight percent of the LIS educators in the Web survey stated that they use face-to-face lectures. LIS students in the focus group discussions agreed that the lecture method is the predominant method used in teaching in LIS education but educators are now including more technology in their teaching. LIS students valued the face-to-face contact in the lecture method of teaching. In the focus group discussions most students claimed that they did not like to have only online learning; they believed that the lecturer's presence and support are still needed. Sweeney, O'Donoghue and Whitehead (2004: 312) support this finding by concurring that classroom teaching or the lecture method remains the dominant mode in the higher education setting. Most higher education academic staff still rely heavily on lectures and seminars as the main and time-honoured means of disseminating knowledge and maintaining some sense of educator/student contact. In the use of blended learning the lecture method is used as a component of the blended learning intervention.

LIS educators interviewed used the lecture method to varying degrees as part of the blend in blended learning interventions. The lecture method was used in the blended learning context using data projectors by five of the 15 LIS educators interviewed and the traditional chalk and talk method by three of the 15 LIS educators. LIS students in the focus group discussion stated that LIS educators used lectures, lectures with PowerPoint presentations and lectures using overhead projectors (OHPs). The lecture method can be ideal for introductory or overview purposes.

Technologies that are commonly used in face-to-face learning situations include PowerPoint, interactive whiteboards and audience response systems. Presentation software such as PowerPoint presentations can be used to present supplementary materials, for example, images, screen-shots and limited text. Interactive whiteboard (IWB) is a touch-sensitive whiteboard that is normally mounted on a wall. This allows students and educators to participate interactively in sessions. It consists of a computer, a data projector and a touch-sensitive screen or whiteboard. The computer can be controlled from the whiteboard by pointing at icons with one's finger or with the use of a special electronic "pen" (Allan 2007: 16). Students in the focus group discussions indicated that they preferred the face-to-face delivery to be accompanied by technology as this is more interactive and that they felt more connected with the content when visuals were included in the face-to-face interactions.

6.2.5.2 Online methods

Online methods are delivered either online using a learning management system (LMS), via the Web, or via CD ROMs or other Web-based computer based technology (CBT) approaches (Georgouli, Skalkidis and Guerreiro 2008: 229). Online delivery can also be seen as an alternative to delivery instructions in a learning environment that uses various media and ICTs, especially Web-related technology, to create, manage, and enable distributed learning synchronously and asynchronously with and without the presence of an educator (Chin Kah 2006: 37). Fifteen percent of the LIS educators in the Web survey listed online classrooms as a teaching method and a further 22% listed distributed teaching using iPod, e-mail, CD-ROMs etc. as the teaching method they used. LIS educators interviewed indicated that they have moved away from the 'chalk and talk' lecture method of teaching to Internet based teaching methods. LIS students in the focus group discussions mentioned that the online teaching methods employed by LIS educators included LMSs, blogs, websites and podcasts. The online component of the blended learning intervention also comprised of the LIS educators posting prior readings online. These readings were used to facilitate class discussions, group discussions, debates, role playing and presentations. Gau (2012: 91) asserts that the online component of blended learning provides a self-administered, creative and productive means for students to ascertain their own understanding and mastery of assigned content.

6.2.5.3 Blended learning

The Web survey results revealed that just under half 15 (44%) of the LIS educators used blended learning. Interviews with these 15 LIS educators indicated that their blended learning interventions were facilitated by using different modes of delivery, online discussion forums and online chats and e-learning.

Almost half (47%) of the LIS educators interviewed stated that the pedagogical principles that underpinned the design, development and delivery of their blended learning were student-centred approaches. Problem-based teaching methods, as well as active learning were advocated by these LIS educators in order to promote critical thinking.

With regard to blended learning, one focus group discussion with LIS students revealed that podcasts of their lectures were posted on the LMS. LIS students from the other five focus group discussions indicated that they would like podcasts of their lectures downloaded.

Blended learning course design that takes into consideration constructivist and student-centred pedagogical approaches together with online components combined with class discussions, group discussions, debates, role playing and presentations fosters increased student interaction and develops higher-level learning skills and could also appeal to a variety of learning styles and allows for effective use of classroom time.

6.2.6 Extent of use of dialogue and discussion/face-to-face delivery in LIS education in South Africa

The terms dialogue and discussion and face-to-face delivery are used interchangeably in this study as some face-to-face interaction involve dialogue and discussion, for example, group discussions and consultations, and indicates some interactive interaction between educators and students. Sixty-eight percent of the LIS educators in the Web survey stated that they used face-to-face lectures. The face-to-face delivery includes student seminars using PowerPoint presentations, group discussions, debates and consultations. LIS educators in the face-to-face interviews expanded on the types of face-to-face delivery used. All the LIS educators interviewed admitted that they still use face-to-face delivery to varying degrees within different types of face-to-face interaction (debate and discussion (53%); lecture using data projectors (33%); chalk and talk (29%); consultation (20%); workshops (13%) and group work (13%)). The students in the focus group discussions concurred with these findings indicating that types of face-to-face delivery methods that they received included lectures, lectures with PowerPoint presentations using data projectors, debates and group discussions, face-to-face consultations and workshops.

Telephone interviews with facilitators of blended learning from higher education institutions yielded that there was no support provided to academics with regard to face-to-face delivery methods. This is probably due to most academics being familiar with and most comfortable using face-to-face delivery modes. However these institutional facilitators of blended learning did offer short courses on facilitation of teaching and curriculum development especially to new academic staff employed at their respective institutions.

It is evident that dialogue and discussion/face-to-face is the predominant mode of delivery in LIS programmes offering LIS education and training at South African universities.

6.2.7 Extent of use of online delivery in LIS education in South Africa

Online delivery is conducted within online methods of teaching as highlighted in Section 6.2.5.2 in this discussion chapter. More than half (58.8%) of the LIS educators in the Web survey revealed that they were already engaged in technology-assisted teaching and learning. LIS educators use online delivery via online classrooms using LMSs, as a component of blended learning or in the distributed method of teaching using iPods, e-mails, CD-ROMs, etc. Fifteen percent of the LIS educators in the Web survey listed online classrooms as a teaching methods and a further 22% listed distributed teaching using iPod, e-mail, CD-ROMs etc. as the teaching methods they used. LIS students agreed with this finding listing online classrooms using LMSs, blogs, Websites and podcasts as online delivery methods used by LIS educators. While podcasts were predominately used by LIS students from only one focus group, LIS students from the other focus groups that were aware of the use of podcasts showed a keen interest in podcasts and indicated that they would like their lectures recorded and downloaded as podcasts. The degree of availability and use of technologies varied amongst the six focus groups. The availability of technical infrastructure differed among the higher education institutions that each of the focus groups emanated from.

LIS educators interviewed indicated that they have moved away from the ‘chalk and talk’ lecture method of teaching to Internet based teaching methods using the online mode of delivery of instructional content. It is interesting to note that only five of the 37 LIS educators in the Web survey indicated that they used online classrooms as a teaching method and yet in the same Web survey 15 (40.5%) of the 37 LIS educators responded that they conducted online delivery of instructional content using LMSs. There could have been some confusion on part of the respondents with regard to the online classrooms as a method of teaching and an online delivery mode using LMSs.

More than half (54%) of the LIS educators surveyed via the Web-based questionnaire indicated that they did not use any LMS while 41% indicated that they had used LMSs. The most commonly used LMSs used were Blackboard (WebCT) and Moodle. Focus group discussions with students concurred with this finding revealing a predominance of the use the Blackboard LMS among three of the six focus groups. LIS students of one of the focus group indicated that they used Moodle while LIS students from the other two groups revealed using LMSs that were customized for their institutions. LIS educators in the Web survey stated that the biggest advantage of using the LMSs is easier communication with students as

well as easier updating and distribution of course material to large groups of students. It was also encouraging to note LIS educators citing in the Web survey that using LMSs fostered collaborative work with a large community base using open source LMS software; LMSs are great for constructivist teaching; the use of LMSs contributed to faster turnaround response time for feedback on assessments and response to correspondence from students; and finally, LIS educators claimed that the amount of instructional course material that could be made available, and hence, the depth of study is greater with the use of LMSs than with face-to-face classes.

However it must also be noted that LIS educators also faced challenges in using LMSs at their respective higher education institutions. These challenges were revealed in the Web survey and included the lack of computer literacy skills on the part of some LIS students; poor class attendance when course content is posted on LMSs; poor ICT infrastructure with insufficient bandwidth and lack of hardware and software maintenance at institutional level; and, power cuts. However, it is a relief to note that only a small percentage (23%) of LIS educators indicated that they experienced power cuts while 77% did not experience power cuts often. It is very important when implementing blended learning interventions that students are computer literate and there exists a good ICT infrastructure with sufficient bandwidth. These challenges need to be addressed at an institutional level for successful blended learning interventions. Khan (2003) and Singh (2003) assert that educators and facilitators of blended learning that are involved in designing and implementing blended learning programmes should consider the preparedness of the organization, availability and structure of content and infrastructure as well as the students' needs. A needs analysis should be conducted to ascertain the needs of students with regard to participation in blended learning.

It is encouraging to note the 71.4% of the LIS educators in the Web survey indicated that their institutions had units that assisted in developing technology-assisted learning systems. These institutional units assisted in training educators to design teaching and learning material for online classrooms to develop blended learning interventions, and assisted with curriculum development using Web-based teaching and learning (refer to Table 5.10 in Chapter 5). LIS educators, interestingly also reveal in the Web survey that educators are responsible for development of online learning content, but not surprisingly and logically so, institutional educational units providing educational support to educators seem to be playing a significant role (32.4%) in the area of online delivery. Encouragingly, significant 48.5%

LIS educators reported in the Web survey that technical support and technical training provided by their respective institutions were either good or very good. Facilitators of blended learning revealed that Deans and Heads of Departments (HoDs) (management positions at higher education institutions in South Africa) were pushing from the top and students were pulling from the bottom for learning materials to be available via the Internet. This augurs well for the possibility of increased use of the latest technologies available in online delivery mode for LIS education and training.

6.2.8 Extent to which LIS programmes in South Africa use blended learning

Less than half (44%) of the LIS educators in the Web survey indicated that they used blended learning as mentioned in Section 6.2.5.3 in this chapter. LIS educators who indicated that they used blended learning were affiliated to six (66.7%) of the nine higher education institutions that offered LIS education and training in South Africa and which participated in the study. Six focus group discussions were conducted for this study involving students chosen from those higher education institutions where LIS educators indicated that they used blended learning.

The interview sessions with LIS educators indicated that there was no consensus in terms of the understanding of the concept of blended learning (refer to Section 6.2.1 of this chapter). There appeared to be a varying degree of use of online teaching and learning platforms. Face-to-face interaction among the distance education institution educators was minimal with discussion classes being conducted once or twice a year. However, Jones' (2006) continuum of blended learning supports this as blended learning whereby the whole module may be delivered online with minimal face-to-face interaction. Teaching methods used by LIS educators participating in the Web survey further indicated the lack of consensus with regard to the concept of blended learning as six percent indicated using student seminars with PowerPoint presentations, almost 20.6 % stated using distributed learning using iPod, email, CD-ROMs, etc. with only one LIS educator indicating using all the teaching methods listed in Item 10 (see Appendix A) of the Web survey. If Jones' (2006) continuum is taken into account the extent of the use of blended learning in LIS education in South Africa would increase to almost 71%. However, Jones (2006) continuum was not taken into account in the presentation of the findings as the researcher only considered the LIS educators' interpretation of the concept of blended learning in presenting these findings.

LIS educators interviewed revealed that in terms of using blended learning the modes of delivery and communication with students have changed from primarily face-to-face interaction to online. LIS educators indicated that there was an increase in the use of information technologies especially ICTs. LIS educators engaged in distance learning and who previously provided course material via post (snail mail) now use online delivery, and hence the move from use of the term 'distance education' to 'online learning'. Most LIS educators (86%) interviewed, indicated that the biggest challenge in implementing blended learning was that many students did not have access to computers and the Internet especially when away from the institution. This is of concern as access to computers is critical in blended learning. It is imperative for educators to be aware of the resources that students have in order to implement teaching and learning using technology and to ensure that students who do not have access to computers and the Internet are not disadvantaged. As mentioned in Section 6.2.7 of this chapter, institutional facilitators of blended learning revealed that Deans and Heads of Departments (HoDs) (representing management in higher education institutions in South Africa) were pushing from the top and students were pulling from the bottom for learning materials to be available via the Internet using blended learning. As Khan (2003) and Singh (2003) suggest, there should be institutional technology infrastructure planning with the appropriate hardware and software for the implementation of blended learning, especially for the online aspects of blended learning. Higher education institutions therefore need to ensure that the technology infrastructure is in place before blended learning is implemented.

LIS students indicated in the focus group discussions that they were exposed to varying degrees of blended learning interventions in their respective LIS programmes (as mentioned in Section 6.2.5.1 of this discussion chapter). A majority of the LIS students indicated that face-to-face is the most predominant method of teaching used in LIS education; however, with the advances in technologies LIS educators are increasingly using more technologies in their teaching. As mentioned in Section 6.2.4.4 of this discussion chapter, LIS students want more creative and interactive teaching methods and the use of advanced technologies so that they would be better prepared for the technology oriented LIS environment. This shows that students are seeking new and innovative ways to meet their educational requirements. Educators in higher education institutions need to address such issues by introducing innovative ways of teaching and learning. Introducing blended learning could be one of the means of improving the quality of teaching and learning in higher education. This is

ascertained from examining the educational and pedagogical benefits of blended learning discussed in Sections 6.2.2 and 6.2.4 of this chapter.

Most LIS students indicated in the focus group discussions that they preferred both the face-to-face as well as the online modes of delivery. A few students however mentioned that they still preferred the face-to-face interaction with their lecturers but took cognizance of the fact that they needed to embrace using new technologies considering that the LIS sector is now deeply rooted in the digital environment. Understandably, most LIS students in the focus group discussions indicated they would not like to have only online learning as they believed that the lecturer's presence and support are still needed. This shows that blended learning would be most appropriate for LIS education in a scenario where LIS students still wanted lecturers' presence and valued face-to-face interaction but at the same time realise that they need to embrace technology in order to prepare them for a LIS work environment that is very technology orientated.

Institutional facilitators of blended learning in this study indicated that they helped and supported educators at their respective institutions, on a consultative basis, with the design and planning of blended learning interventions. These facilitators revealed that they conducted needs analyses to ascertain educators' needs so that the appropriate assistance may be provided to the educators in the design and development of blended learning interventions. One institution also mentioned that they had staff that specialized in blended learning in their institutional teaching and learning unit. LIS educators should therefore make appropriate use of such support from institutional facilitators of blended learning in order to develop blended learning interventions for their programmes.

As mentioned in Section 6.2.5.3 of this chapter, almost half (47%) of the LIS educators interviewed stated that the pedagogical principles that underpinned the design, development and delivery of their blended learning interventions were student-centred. Three of the 15 LIS educators interviewed indicated using a constructivist approach, two used cognitive theory and one used connectivism to inform blended learning interventions. This is encouraging as it shows that almost 50% of those LIS educators who are using blended learning are doing so using sound pedagogical principles. However, when LIS educators when asked during interviews with them, how learning theories and learning styles informed the educational design and facilitation of blended learning in their respective programmes, disappointingly, they did not address this issue sufficiently (refer to Table 5.29 and Table 5.30 in Chapter 5).

Hence it was not clear exactly how LIS educators used learning theories to inform the educational design and facilitation of blended learning interventions in their programmes. Most of the LIS educators interviewed revealed that they were not trained as educators and therefore do not have educational theory background and they also admitted to not doing conscious research on learning theories. Institutional facilitators from teaching and learning units seem to have come to the rescue where they assist educators in designing blended learning interventions. Beyers (2009: 224) affirms that there is a need to transform education from a “teacher-centred behaviouristic” model to a learner-centred “constructivist model” by empowering educators to empower learners through the integration of ICTs into all aspects of the teaching and learning process.

The Web survey findings of this study indicate that less than half of the LIS educators surveyed indicated that they used blended learning and interviews with LIS educators showed that there is no clear consensus among LIS educators with regard to the concept of blended learning and how to construct and integrate the different components of blended learning for effective teaching and learning. Taking into consideration the varying definitions of blended learning (refer to Section 3.2.1 in Chapter 3), this is understandable. However, there seems to be a move on the part of LIS educators, and, LIS students to transform LIS education and training. There is an increase in the use of technologies especially ICTs. As mentioned in Section 6.2.3.1 in this discussion chapter, institutional facilitators of blended learning are available to assist LIS educators to incorporate learning theories and learning styles as pedagogical tools that will offer pointers to the development of teaching and learning practices that are embedded in educational language that the educators will understand. It is therefore suggested by the researcher that the development of a framework would assist LIS educators to consciously reflect in terms of teaching and learning practices generally in higher education and particularly in LIS education and training, and to draw best practices from all the components of blended learning so that the most appropriate delivery method can be chosen for blended learning interventions.

6.2.9 Theoretical and practical aspects in designing effective blended learning interventions

Gardner (1999) said, “You cannot know a theory until you put it into practice”. The theoretical framework can be seen as the existing knowledge that can be used in designing effective blended learning interventions. Garrison and Vaughan (2008: 13) state that a

theoretical foundation provides a means to shape the educator's practice as well as reflect upon and make sense of outcomes, and therefore blended learning designs, which have a range of possibilities "demands a strong theoretical foundation and framework". This basis of theoretical knowledge enables the educator to apply practically in blended learning interventions. The educator needs to ask how the underlying theoretical knowledge is applied in designing effective blended learning interventions. In order to appropriately apply learning theories and learning styles to their teaching practice, educators need to understand the theories and to continue to do research on them in order to make appropriate applications for their own teaching practice and for their own students. Learning theories, learning styles the two blended learning frameworks (Khan's Octagonal Framework (2003) and Community of Inquiry (CoI) Framework (Garrison and Vaughan 2008) underpinning the theoretical framework of this study and the instructional tools and techniques in designing blended learning interventions, are discussed in this section.

According to Siemens (2004) three broad learning theories are most often utilized in the creation of instructional environments. Behaviourist strategies are used to teach the facts, cognitive strategies the process and principles, and constructivist strategies of higher level thinking promote personal and contextual meaning (Bezuidenhout, Van der Westhuizen and De Beer 2005: 5-8). As mentioned in Section 6.2.5.3, three of the 15 LIS educators interviewed indicated using a constructivist approach, two used cognitive theory and one used connectivism to inform blended learning interventions. It is indeed encouraging to observe that close on to 50% of the LIS educators interviewed who are using blended learning are doing so using sound pedagogical principles. Also mentioned in Section 6.2.3 is that in the blended learning environment, the constructivist paradigm uses a mixture of methods of teaching and modes of delivery in the classroom environment and visual media in the electronic environment to aid knowledge construction and reinforcement. As such, multimedia designs and information retrieval concepts are central components of the constructivist learning space (Rodrigues 2002:49). Cooner (2005: 375-376) argues that a constructivist approach focusing on knowledge construction as opposed to knowledge transmission is better in preparing students to gain skills that are required to work in situations of diversity. LIS educators in the Web survey revealed that they used a combination of learning theories to address the diversity of the student population at South African universities. In Figures 6.3, 6.4, 6.5, 6.6 the researcher draws from her understanding

of educational pedagogy and the literature to highlight key tenets of the following learning theories; Behaviourism, cognitivism and constructivism and connectivism.

Figure 6.3

Behaviorism

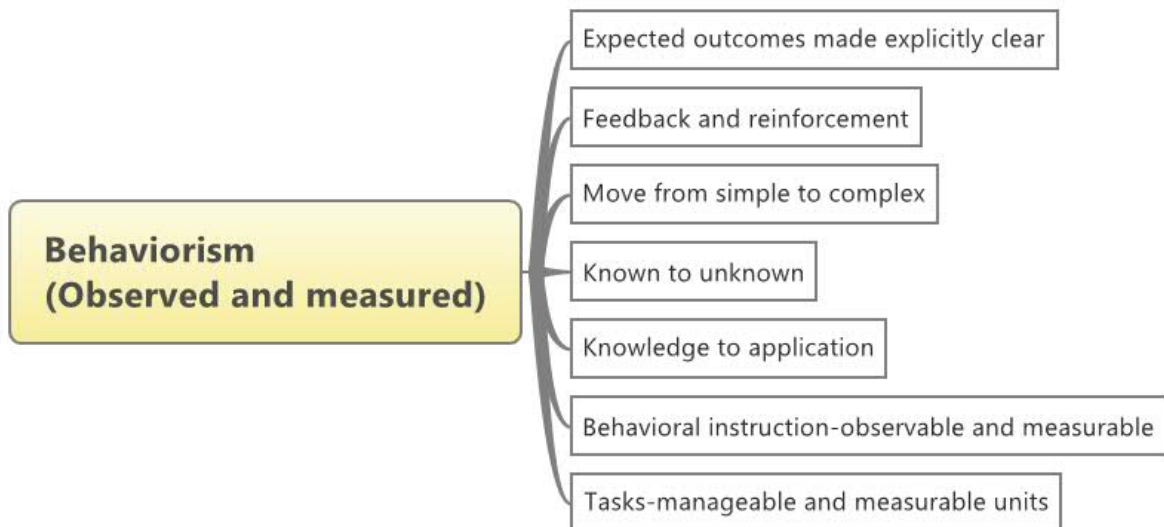


Figure 6.4

Cognitivism

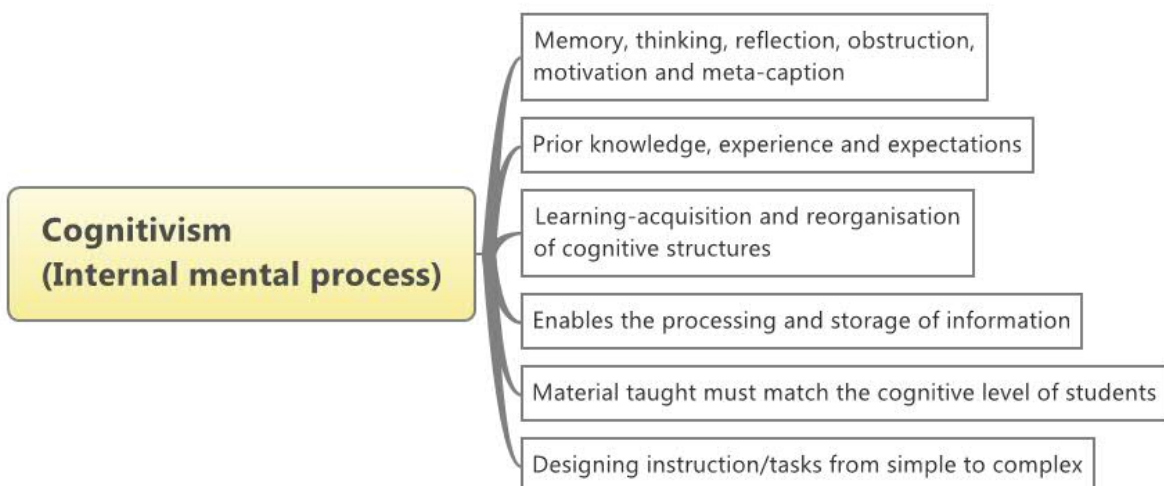


Figure 6.5

Constructivism

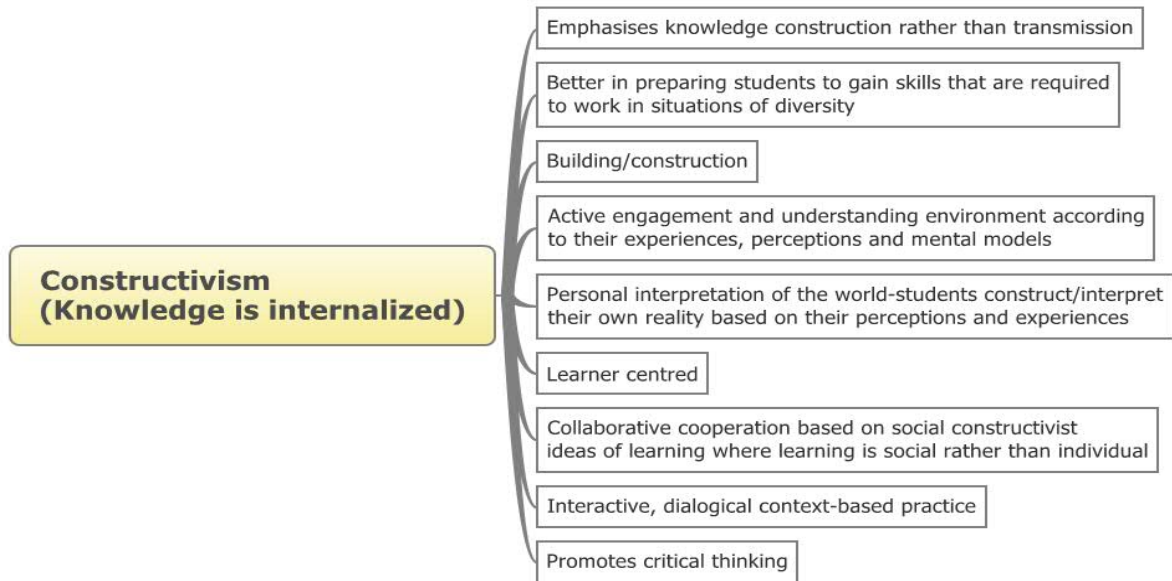
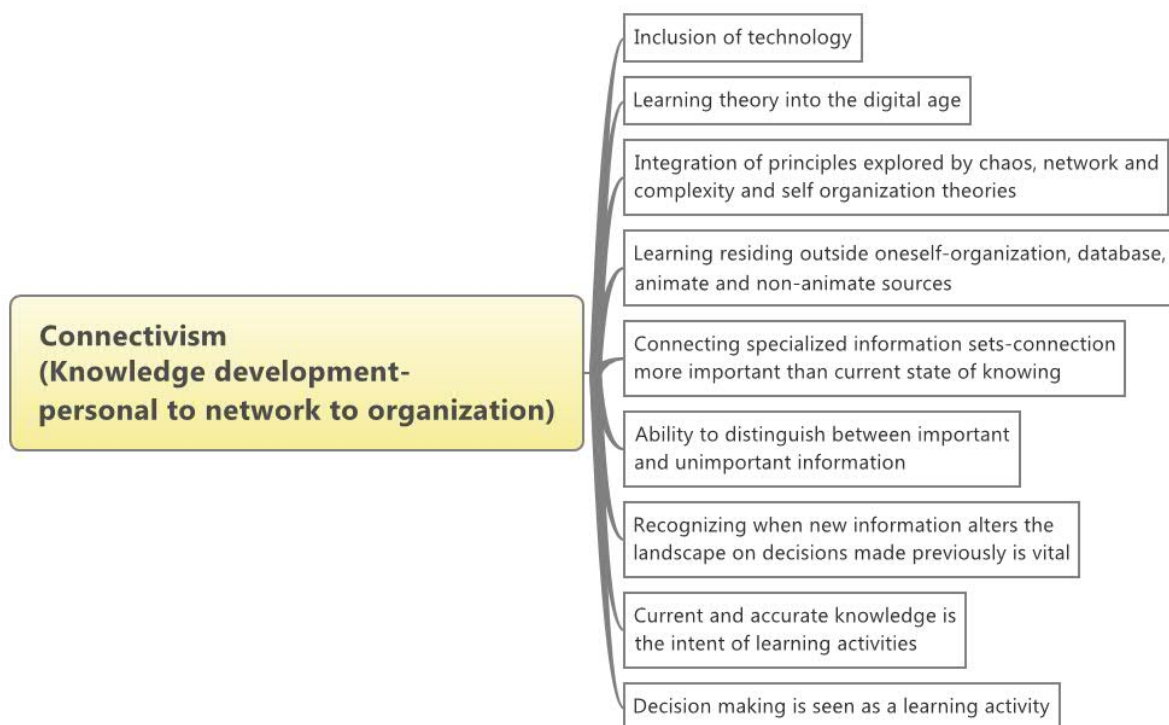


Figure 6.6

Connectivism



There are various other theories that are associated with blended learning such as cognitive load theory (CLT), activity theory, sociocultural theory, transactional distance theory, etc. However these theories have their foundations in the behaviourism, cognitivism and constructivism. Connectivism was included in this study (as discussed in Section 2.3.4 of Chapter 4) as connectivism involves the inclusion of technology and ‘making the connection’ as learning activities begins to move learning theories into a digital age. Connectivism can be seen involving the growing interest in the teaching and learning potential of Web 2.0 technologies and practices. Connectivism is “the integration of principles explored by chaos, network, and complexity and self-organization theories” (Siemens 2004). Interviews with LIS educators revealed one LIS educator using connectivism in blended learning interventions. LIS educators and institutional facilitators assisting educators with blended learning interventions need to research the theories that best suit their unique situations taking into account students’ diverse learning backgrounds, the educators experience and teaching philosophies. For example LIS educators in a higher education institution that offers distance education may consider the transactional distance theory which is theory that is created around distance education (Wold 2011: 376).

Students should also reflect on their learning. Educators need to train students to think about their learning practices especially with regard to how they think and how they learn. This is referred to as metacognition. Ball (2008: 71) advocates experiential learning, also known as WiL (Work Integrated Learning) or service learning, as introducing LIS students to the workplace, fostering a sense of professional identity and values and also providing opportunities to reflect on their practice. Ball (2008: 73) also emphasizes that if Kolb’s model which requires a reflection component, was used, it would enrich and deepen student learning. Kolb’s model is based on the experiential learning theory that outlines concrete experience and abstract conceptualization relating to experience and reflective observation and active experimentation approaches towards transforming experience. According to Kolb’s model the learning process engages a combination of experience, perception, cognition and behavior in response to particular situation (Uğur, Akkoyunlu and Kurbanoğlu 2011: 8). Furthermore reflection is a key to understanding how the WiL experience is related to the theory taught in the courses within the instructional programme.

Blended learning could enable students to take their preferred route to learning through a mixture of learning activities that appeal to a wide range of learning styles. However in practice it is not always possible to design blended learning programmes that cover all the

learning style preferences at all times. Felder (nd.) states that although educators cannot design instruction to cater for all learning styles they need to strike a balance, making sure that the student's learning style preference is addressed to a reasonable extent during instruction. Blended learning programme designers can attempt to meet the needs of different learning style preferences at some stage in the learning process (Allan 2007: 51). As pointed out in Section 6.2.3.2 of this chapter, a correlational study of learning styles and learner satisfaction done by Henry (2008: 410) indicates that the visual side of the visual-verbal dimension of students' learning styles(s) was positively correlated to satisfaction with themselves as learners in a blended course delivery mode and negatively correlated to satisfaction with the classroom environment in the context of a traditional classroom delivery mode. Such observations could be taken into consideration in informing the educational design and facilitation of blended learning interventions.

Hirumi (2011: 22) advocates that the design for e-learning or blended learning must be grounded in research and theory in order for educators and facilitators of blended learning to make key decisions and also promotes the alignment between theory and practice. The use of a framework can avoid the distortion that could arise from the separation of theory and practice. This is explored in the next two sections.

6.2.9.1 Khan's Octagonal Framework

In this section Khan's Octagonal Framework (Khan 2003) as well as Singh's (2003) adaptation of Khan's framework will be examined together with the literature on blended learning and empirical data obtained from this research, to develop a framework for the use of blended learning in the delivery of Library and Information Science curricula at South African universities. Khan's Octagonal Framework (Khan 2003) as well as Singh's (2003) adaptation of Khan's framework (as discussed in Section 2.4 of Chapter 2) are revisited (refer to Figures 6.7 and 6.8 in light of the findings of this study and for the development of a blended learning framework for LIS education in South Africa).

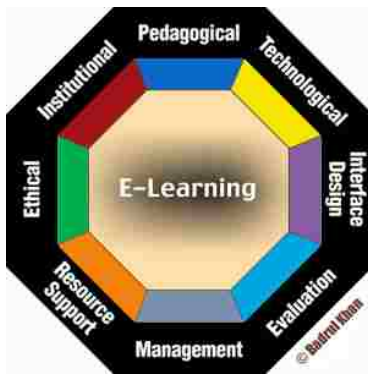


Figure 6.7: Khan's Octagonal Framework (2003)

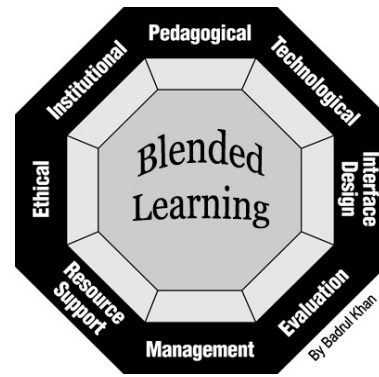


Figure 6.8: Khan's Octagonal Framework adapted by Singh (2003)

The **pedagogical** dimension in this framework refers to teaching and learning needs. This dimension addresses issues concerning content analysis, audience (student needs) analysis, goal analysis, media analysis, design approach, organization and methods and strategies of e-learning environments. The learning goals or learning outcomes need to be listed and the most appropriate delivery method is chosen (Khan 2003; Singh 2003). The pedagogical dimension was examined in this study using a Web survey of LIS educators, focus group discussions with LIS students, and interviews with selected LIS educators and institutional facilitators of blended learning at South African universities offering LIS education and training. The pedagogical benefits of blended learning for LIS programmes in South Africa (are discussed in Section 6.2.4 of this discussion chapter) and the teaching methods as well as the modes of delivery (face-to-face and online) used in the design and facilitation of blended learning interventions are discussed in Sections 6.2.5, 6.2.6 and 6.2.7.

The **technological** dimension of the E-Learning Framework examines issues of technology infrastructure used in e-learning environments. This includes infrastructure planning, hardware and software. It also includes creating a learning environment with the appropriate tools to be able to deliver a learning programme (Khan 2003; Singh 2003). This dimension also addresses the need for finding the most suitable learning management system that could manage multiple delivery types and a content management system that catalogues the learning content for the learning programme (Amalou 2006: 7). This dimension is discussed to some extent Section 6.2.7. As mentioned in Section 6.2.7, the degree of availability of technical infrastructure differed from among higher education institutions participating in this study. To a large extent this technological dimension involves institutional choices beyond the control of individual educators. Hence this dimension will not be included in the

development of a blended learning framework for this study. However, it is the view of the researcher that while the provision of technical infrastructure necessary for blended learning is a responsibility that lies with management of the institution, educators need to ensure that these provisions (technical infrastructure, hardware and software, etc.) are in place before implementing blended learning interventions.

The **interface design** refers to the overall look and feel of e-learning programmes. The interface design dimension encompasses page and site design, content design, navigation, and usability testing. The user interface needs to support all the elements of the blend. It has to be able to integrate the different elements of the blend, which will enable the student to use the different delivery types as well as switch from one delivery type to another (Khan 2003; Singh 2003). This study did not cover interface design. The institutional facilitators of blended learning assisted LIS educators with site design, content design and usability.

The **evaluation** dimension includes both assessment of learners and evaluation of the instruction and learning environment. Singh (2003: 53) portrays this dimension as being concerned with the usability of blended learning programmes. Programmes should have the capability to evaluate the effectiveness of a learning programme as well as to evaluate the performance of the students. Each delivery type should be evaluated in blended learning programmes, using an appropriate evaluation method. The researcher acknowledges that evaluation of blended learning interventions are essential, and hence this study, in its discussion of findings (refer to Sections 6.2.3.2, 6.2.4.1, 6.2.4.4 and 6.2.9) emphasized that LIS educators should reflect regularly on their teaching and learning practices individually.

The **management** of e-learning refers to the maintenance of the learning environment and distribution of information. This dimension also addresses issues such as registration and notification and scheduling the different elements of the blend (Khan 2003; Singh 2003). This study indicated that the management of the learning environment was the responsibility of the LIS educator (refer to Section 5.5.1.8.3.4 in Chapter 5 and Sections 6.2.5.3 and 6.2.8 in this chapter) with the assistance of the institutional facilitators of blended learning when needed.

The **resource support** dimension of the E-Learning Framework examines the online and offline support and resources required to foster meaningful learning environments (Khan 2003). A majority (82.8%) of the LIS educators in the Web survey indicated that they

received support with the use of technology from the teaching and learning units at their respective institutions (as discussed in Section 6.2.4.2.1 of this chapter).

The **ethical considerations** of e-learning relate to social and political influence, cultural diversity, bias, geographical diversity, learner diversity, information accessibility, etiquette, and the legal issues (Khan 2003; Singh 2003). The ethical consideration for this study included geographical diversity of the student population, learner diversity and student access to computer facilities and the Internet (see Sections 6.2.4.2 and 6.2.4.2.2 in this chapter) which educators and facilitators of blended learning need to factor into the design and implementation of blended learning intervention. The social and political influence, cultural diversity, bias and legal issues not addressed in this study as the philosophical foundation of this study did not adopt a critical paradigm which would have addressed such issues. Hence the latter are beyond the scope of this study.

The **institutional** dimension is concerned with issues of administrative affairs, academic affairs and student services with reference to matters of education, particularly e-learning. Staff involved in designing and implementing learning programmes should consider the preparedness of the organization, availability and structure of content and infrastructure as well as students' needs. A needs analysis should be conducted to ascertain the needs of the students (Khan 2003; Singh 2003). The findings of this study indicate that the institution has a crucial role to play in providing adequate technological infrastructure and student services especially for the online component of blended learning interventions (refer to Section 6.2.4.2.2 of this chapter).

This section discussed Khan's Octagonal Framework (2003) as well as Singh's (2003) adaptation of Khan's framework since Singh's adaptation focused on blended learning whereas Khan's framework focused on e-learning. This framework that forms part of the theoretical framework of this study, together with the literature on blended learning as well as the findings from this study and their contributions towards the development of a blended learning framework for LIS education in South Africa, were examined in this section. The other framework that contributed towards the theoretical framework for the development of a blended learning framework for LIS education in South Africa, namely the Community of Inquiry (CoI) framework, is discussed in the next section.

6.2.9.2 Community of Inquiry (CoI) Framework

Garrison and Vaughan (2008: 14) describe the Community of Inquiry (CoI) as the “heart of higher education experience” and are shaped by “purposeful, open, and disciplined critical discourse and reflection”. The purpose of the CoI framework is to guide the use of instructional technologies in “creating and sustaining deep and meaningful learning through reflection and discourse in online and blended learning environments” (Garrison and Akyol 2009: 23). The three interdependent elements present in the CoI framework are teaching presence, cognitive presence and social presence.

The areas of responsibility for the **teaching presence** include, design, facilitation and direct instruction for realizing meaningful and educationally sound learning outcomes. Instructional technologies expand the teaching presence, the use of Web 2.0 technologies lead to designing innovative, challenging and collaborative learning environments and activities. New technologies also facilitate means for communication and interaction between students and educators. Direct instruction can be implemented by obtaining information from diverse sources in different forms using emerging technologies (Garrison and Akyol 2009: 23). With regard to this study the responsibility of the teaching presence sits primarily with the LIS educators with assistance from the institutional facilitators of blended learning (as evident in the findings and discussion of this study).

The **cognitive presence** element of CoI exists in an “environment that enables learners to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry” (Garrison, Anderson and Archer 2001: 11). The main contribution of the cognitive presence is its affordance of collaborative information discovery and creation (Garrison and Akyol 2009: 24). Enabling students in higher education to construct meaning and engage in reflection and critical discourse could contribute to establishing higher order thinking skills. The findings of this study indicate that LIS educators interviewed acknowledged that creative and complex thinking skills need to be fostered in higher education (see Section 6.2.2.3 in this chapter). As discussed in Section 6.2.2.3, reflective thinking helps students to become more metacognitively aware and hence should be incorporated in assigned readings and assessments (Tanner 2012: 117).

The **social presence** can be seen as the ability of participants “to identify with the community, communicate purposefully in a trusting environment and develop inter-personal

relationships” (Garrison and Akyol 2009: 24). The social presence also refers to the ability of participants in a community of inquiry to express themselves socially and emotionally showing their full personality through whatever means of communication that is being used (Garrison, Anderson and Archer 2000: 94). Communication features that can be found in Web 2.0 technologies that allow participants to interact and communicate affective responses in both synchronous and asynchronous formats encourage social presence. Social networking sites could support the development of social presence by providing ways of self-disclosure or to express emotions, leading to a learning environment where students can feel comfortable in the learning process (Garrison and Akyol 2009: 24). The findings of this study for both the interviews with LIS educators and the focus group discussions with students indicated that the face-to-face interaction between educators and students provided various benefits to both LIS educators and LIS students, including them being able to get to know each other better (see Section 6.2.2.1 of this chapter). LIS educators surveyed indicated that biggest advantage of using online learning that it is easier to communicate (using both synchronous and asynchronous formats) with students (refer to Section 6.2.2.2 in this chapter).

An element that is not emphasized enough in both these frameworks (discussed in Section 6.2.9.1 and 6.2.9.2) is learning theories and learning styles or preferences of students. Interviews with LIS educators showed that LIS educators did not sufficiently address the issue of learning theories and learning styles to inform the educational design and facilitation of blended learning in their respective programmes (refer to Section 6.2.3.1 of this chapter). Therefore the proposed framework for blended learning in the delivery of LIS curricula features emphasises learning theories and learning styles.

The theoretical framework for this study which includes the learning theories, the learning styles and the two blended learning frameworks (Khan’s Octagonal Framework (2003) and Community of Inquiry (CoI) Framework (Garrison and Vaughan 2008)), the literature reviewed and the practical aspects discussed from the findings discussed in this chapter, form the basis of developing the framework for blended learning in the delivery of LIS curricula at South African universities.

6.2.10 Blended learning framework for the delivery of LIS curricula in South African universities

According to Garrison and Vaughan (2008: 13) a blended learning framework must integrate careful thought and action and provide an understanding for the importance of ‘sustained critical discourse and private reflection’. The framework for blended learning in the delivery of LIS curricula at South African universities, proposed by this study, aims at encouraging LIS educators to engage with relevant theoretical knowledge, reflect on their teaching and learning practices and practically apply this theoretical knowledge and reflections in the design and implementation of blended learning interventions. Such a blended learning framework needs to present key components of blended learning that are cognizant of the institutional climate of individual higher education institutions and at the same time offer the potential for higher order thinking, reflection and collaborative teaching and learning practices. The framework should not be seen as a prescriptive but rather be used as a design exemplar when creating blended learning interventions.

The framework for blended learning in the delivery of LIS curricula at South African universities proposed by this study is generated from the theory informing this study, the literature reviewed, the findings of this study, the researcher’s own educational experiences and is grounded in the larger field of higher education.

The blended learning framework that is proposed arose from the research problem highlighted in Section 1.2 of Chapter 1. The broad objective of the study was to explore the educational and pedagogical issues in blended learning for the development of a framework for designing and implementing blended learning in the delivery of LIS curricula in South African universities. The blended learning framework proposed in this section is aimed at incorporating the salient educational and pedagogical issues explored in this study for the design and delivery of blended learning interventions in LIS education and training. The proposed framework emphasizes learning theory so that whatever idea about the teaching and learning being contemplated, it makes sense intellectually and can then be logically implemented in an applied context. Each individual higher education institution can ascertain an approach to blended learning that has a fit to individual practice within the multidisciplinary nature of LIS education and training in a particular institution. The findings of this study reveal that there is no consistency with regard to the broader academic unit in higher education institutions offering LIS education and training (refer to Table 5.2 of

Chapter 5) where it is evident that LIS departments or programmes are located in various disciplines in the different higher education institutions offering them. The names of the departments or programmes in LIS education (refer to Figure 5.2 and Table 5.3 in Chapter 5) indicate that there is a trend away from the use of the term 'library' to the more preferred term 'information'. This shows a much broader focus and a more multidisciplinary nature of LIS education and training, with each individual institution opting to focus on particular areas of specialization.

Blended learning is a complex concept with many approaches by which blended learning can be attained. According to Driscoll (2002) these approaches include a combination or mixed modes of Web-based technology, a combination of various pedagogical approaches can also be used to produce an optimal learning outcome with or without the use of instructional technology; or any form of instructional technology (videotape, CD-ROM, Web-based training, film) can be combined with face-to-face instructor-led training. This flexibility, to an extent, allows for institutions to tailor the concept and maximise the potential of blended learning while still being responsive to diverse student populations. The definition blended learning, adapted from Heinze and Proctor (2004) was slightly further developed for this study, is as follows:

Blended learning is facilitated by the effective combination of different modes of delivery, methods/models of teaching, learning theories, learning styles/preferences, competencies and diverse learning backgrounds and should be founded on effective communication and collaboration amongst all participants of the blended learning process.

Considering that there is presently no consensus amongst LIS educators on the concept of blended learning and on establishing the key components of blended learning (as evident from the findings of this study), a blended learning framework could contribute towards gaining a common understanding of the key components of blended learning for LIS education in South Africa. The key components for such a framework should be modes of delivery, methods/models of teaching, learning theories, and learning styles/preferences.

Osguthorpe and Graham (2003: 232-233) state that the mix or the blend can be influenced by many factors such as course instructional goals, students characteristics, instructor experience and teaching style, discipline, developmental level, and online resources available. In South African higher education institutions the learning outcomes, learning theories, students' learning styles and competencies, students' diverse learning backgrounds, educators'

experience and teaching style and teaching philosophies, the LIS sector which has become dominated by digital technologies, the level of study and the institutional resources that are available for blended learning, will all influence the design of blended learning interventions for LIS education.

The framework for blended learning in the delivery of LIS curricula at South African universities proposed in this study, is rooted in the theoretical framework discussed in Section 6.2.9 this chapter. The design and implementation of blended learning in LIS education must, as advocated by Hirumi (2011: 22) be:

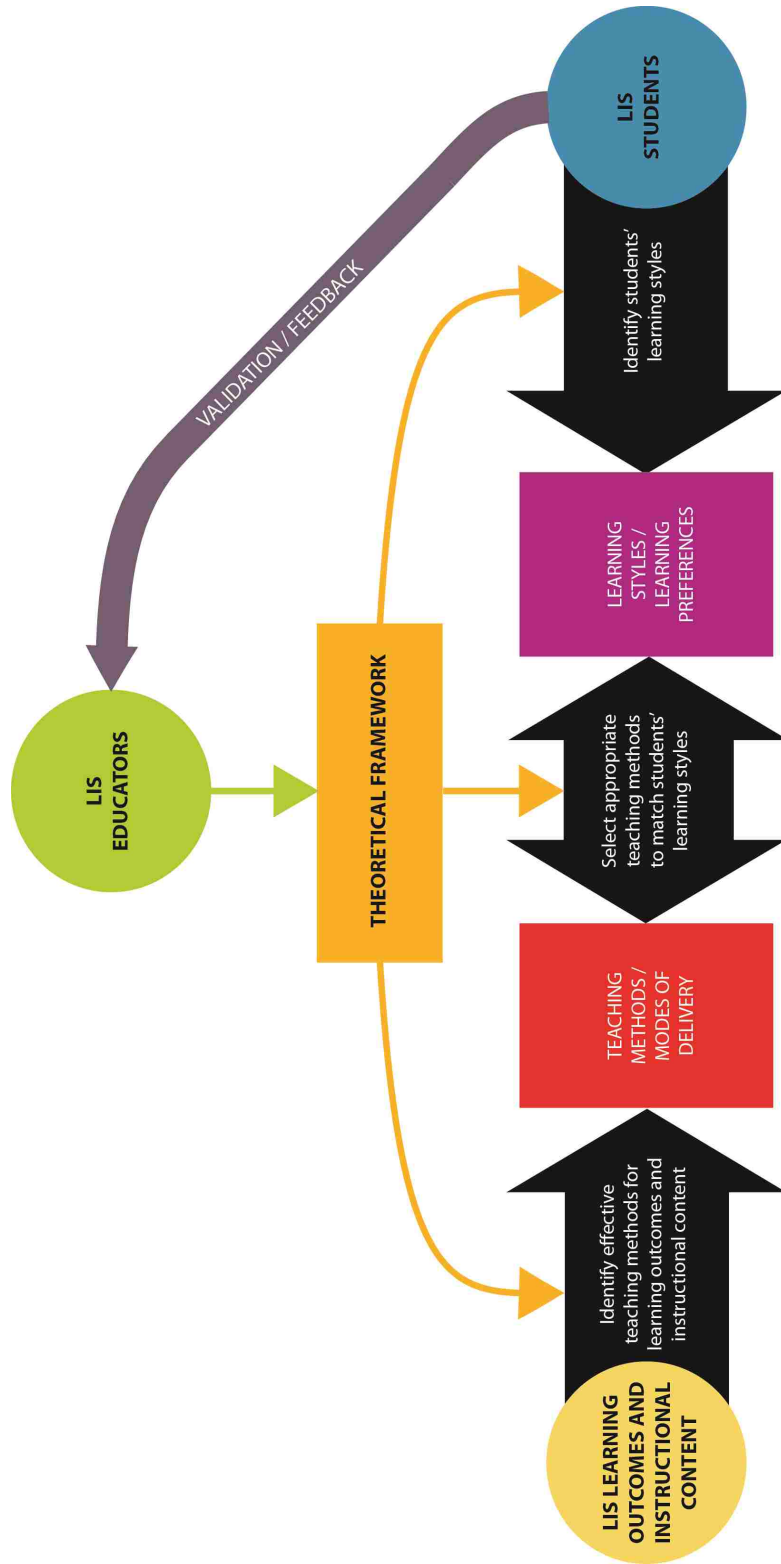
- Rooted in the theoretical framework which includes learning theories, learning styles and aspects of developed blended learning frameworks;
- Teaching methods used in blended learning interventions must be consistent with research conducted to test and validate the theories on which they are based;
- Blended learning designs must be generalizable to situations beyond the particular conditions they are used for, so that the framework can be flexible enough for the South African higher education system that allows for diversity of programme offerings. [This applies to LIS education and training, as can be evidenced in the findings (refer to Section 5.5.1.3 in Chapter 5) highlighting the multidisciplinary nature of LIS education and training]; and
- Validation or feedback from the students to the educators can be used to ascertain the success of the blended learning design.

Hence the following process (graphically represented in Figure 6.9) may be followed when designing and implementing blended learning interventions in the delivery of LIS curricula:

- Select an instructional strategy using a theoretical framework based on the learning theories, teaching philosophies and learning styles/preferences of students;
- Examine learning outcomes and instructional content;
- Apply the instructional strategy by identifying effective teaching methods and modes of delivery for the learning outcomes and instructional content;
- Select the instructional tools and techniques (e.g. direct instruction, experiential learning, self-regulated learning, problem-centred approach, reflective teaching and learning, etc.) for each lecture pertaining to the LIS curricula; and

- Reflect on the quality of the blended learning intervention from the feedback and validation from the students and self-reflection on the part of the educator.

Figure 6.9
Proposed framework for blended delivery of LIS curricula



6.3 Conclusions of the study

The previous section discussed the findings of the current study in the context of the theoretical framework informing the study and the literature reviewed. Generally the findings in this study were supported by some of the theories, aspects of existing learning frameworks and the literature that was reviewed (as discussed in Section 6.2.9 of this chapter). Based on the discussion in this chapter, this section, in drawing conclusions based on this discussion, attempts to ascertain the extent to which the critical questions generated to meet the objective of the study, have been addressed:

- The key educational benefits of blended learning include personal interaction in the face-to face component of the blended learning intervention; the facilitation of easier communication; reinforcement of course content; student retention; and motivation to some extent. Critical thinking is deemed to be one of the benefits of blended learning. Most LIS educators who indicated that they used blended learning agreed that the LIS students whom they taught were generally lacking in critical and reflective thinking skills, and that LIS educators should foster critical and reflective thinking. However LIS educators admitted to not consciously engaging students in critical, creative and complex thinking practices. The Community of Inquiry (CoI) framework, metacognition and self-regulated learning can be used to advocate critical and reflective thinking in blended learning environments.
- While most LIS educators surveyed indicated that they used a combination of learning theories (behaviourism, cognitivism and constructivism), some admitted to not formally having studied educational theories but at the same time agreed that professional insight into educational theories needed to be sought. It would seem that many LIS educators do not have qualifications pertaining to teaching and learning, and hence do not sufficiently address how learning theories and learning styles inform the educational design and facilitation of blended learning interventions. Institutional facilitators of blended learning tend to provide assistance in incorporating learning theories in the design of course material and blended learning interventions. Further, LIS educators need to align students' learning styles to learning theories used when designing and implementing blended learning interventions, especially that most LIS students in the study revealed that they are visual and verbal learners. Institutional facilitators of blended learning indicated that LIS educators needed to accommodate the various learning styles of students due to the diversity of students in South Africa

who come from different backgrounds (culturally, educationally, economically, etc.). They also stressed the importance of including learning styles in the blend to match the learning preferences of students with the design and type of teaching method in order to improve student satisfaction and the learning outcomes of the course, and ultimately students' performances.

- The pedagogical benefits of blended learning include a transformation in teaching in LIS education with a shift in the face-to-face teaching and learning environment to one with an increased focus on ICTs. LIS educators are now using a lot more technology, especially ICTs in their teaching and learning. Institutional teaching and learning units are providing support for teaching staff. This support comprises of designing and training in Web-based teaching and learning interventions, curriculum development, teaching methodologies and various other training interventions.
- There is an increase in use of technology in the delivery method used by LIS educators to facilitate blended learning interventions. Online teaching methods used in LIS education and training include LMSs, blogs, websites and podcasting. LIS educators indicated that their blended learning interventions are facilitated by using different modes of delivery, online discussion forums and online chats, and e-learning. Blended learning course design that takes into consideration constructivist and student-centred pedagogical approaches together with online components combines with class discussions, group discussions, debates, role playing and presentations to foster increased student interaction and develops higher-level learning skills; this could also appeal to a variety of learning styles and allows for effective use of classroom time.
- Face-to-face (also referred to as dialogue and discussion) is the dominant mode of delivery in LIS education and training in South Africa, but with an increase in the use of technology, especially ICTs, by LIS educators. LIS students indicated that although there are benefits to face-to-face interaction they preferred the face-to-face delivery to be accompanied by the use of technology to make the teaching and learning experience more interactive and feel more connected to the content when visuals are included in the face-to-face interaction. LIS educators need to therefore align their teaching methods and modes of delivery with students' learning styles.
- Less than half of LIS educators used Learning Management Systems (LMS). The most commonly used LMSs are Blackboard (WebCT) and Moodle. Other online

delivery modes by LIS educators include blogs, Websites and podcasts. Distance learning has been transformed from providing education by distributing course material via post (snail mail) to now using discussion forums and online learning.

- Less than half of the LIS educators surveyed use blended learning and almost half of those interviewed stated that the pedagogical principles that underpin the design, development and delivery of their blended learning interventions are student-centred approaches. Problem-based teaching methods, as well as active learning are advocated by LIS educators to promote critical thinking. There appears to be varying degrees of use of online teaching and learning platforms in LIS education in South Africa. Allen, Seaman and Garrett's (2007: 5-6) classification or Jones' (2006) continuum of blended learning can be used as guidelines in the design and implementation of blended learning in LIS education to ascertain the composition of the different components of teaching and learning that are mediated by technology.
- The framework for blended learning emanating from this study (see Figure 6.9) takes into consideration theoretical and practical aspects affecting the design of blended learning interventions and is also cognisant of the institutional context of individual higher education institutions offering blended learning; at the same time it offers the potential for higher order thinking, reflection and collaborative teaching and learning practices in LIS education and training in South Africa.

6.4 Recommendations of the study

Higher education institutions undergoing programme development and curriculum renewal need to take cognisance of the benefits of a blended approach to LIS curriculum delivery, particularly in the current digital context. In undertaking blended learning interventions it is recommended that all the elements within the proposed framework (see Figure 6.9) are considered, particularly recognizing the importance and place of all components in the blended learning process. The theoretical imperatives especially learning theories and learning styles/preferences should be subjected to continuous reflection and research especially when designing new courses and programmes where key decisions about teaching philosophies and teaching methods need to be made. Educators and facilitators of blended learning need to keep abreast of current research in blended learning so that the latest developments and thinking in this emerging educational sub-discipline may be incorporated into institutional curriculum design and delivery.

The role of self-regulated learning and metacognition in using blended learning to promote higher order thinking skills, touched on in this study but not delved into in great detail, needs further investigation as it could be used to enhance the learning styles component of the proposed LIS blended learning framework. This important area could be subject of another study.

Using blended learning for collaboration and the community of practice amongst higher education institutions in South Africa or even internationally, that offer LIS education, is another relevant area that surfaced in this study and which requires more detailed attention in further study.

6.5 Summary and conclusion

This final chapter has consolidated the exploration of the educational and pedagogical issues relating to blended learning in the higher education context and particularly in the delivery of LIS curricula in South African universities, for the development of a framework for designing and implementing blended learning in LIS education and training. The development of such a framework is captured in Figure 6.9.

This discussion chapter was based on the main findings of the study in the context of the theoretical framework underpinning this study and literature which informed the research. The discussion of main findings was structured in terms of the critical questions generated to address the objective of the study which responded to a research problem articulated in Chapter 1. Based on this discussion, conclusions have been drawn and recommendations made.

The researcher is confident that the study has been successful in meeting its objective of exploring the educational and pedagogical issues in blended learning for the development of a framework for designing and implementing blended learning in the delivery of LIS curricula in South African universities. It is believed that the critical questions generated to address this objective as well as the research instruments designed for the study (Web-survey questionnaire for LIS educators, interview schedules for LIS educators involved with blended learning, and institutional facilitators of blended learning, and a schedule for focus group discussions with LIS students) were adequate in collecting the data required to respond to the critical questions.

It is believed that the outcomes of this study (especially its proposed framework for blended delivery of LIS curricula) has the potential to contribute to LIS education and training in South Africa (and possibly even in other disciplines), especially in the current digital age where the 21st century ‘net’ generation student is comfortable in the online environment. Further, the use of blended learning has the potential to transform LIS education and training by encouraging LIS educators to reflect on their teaching and learning practices and to use the proposed framework as a guideline to design pedagogically sound blended learning for LIS education and training. In this vein, the study also has the potential to promote the use of pedagogically rich blended learning environments in education and training in other disciplines as well.

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Appendix A

SURVEY QUESTIONNAIRE FOR LIBRARY AND INFORMATION SCIENCE EDUCATORS

The development of a framework for blended learning in the delivery of Library and Information Science curricula at South African universities

This survey is being undertaken in fulfillment of the Doctor of Technology in Library and Information Studies at the Durban University of Technology. This study explores the educational and pedagogical aspects of blended learning for the purposes of developing a framework for designing and implementing blended learning in LIS education. The study also explores the benefits of using more transformative and interactive teaching and learning practices in LIS education. The purpose of this initial exploratory survey is to ascertain the nature of current practices in the delivery of LIS curricula at South African universities. Your responses would assist in identifying valuable face-to-face practices as well as online learning practices for maximum educational and pedagogical benefits in the delivery of LIS curricula at South African universities.

Please note:

1. Answer all questions. Responses to certain questions are determined by your response to a previous question; in such instances questions not applicable to you are automatically made inactive.
2. Those questions marked with an asterisk (*) have been made mandatory in order to facilitate completion of the questionnaire. Kindly ensure that these questions are responded to.
3. This survey is intended to run using any web browser.
4. Your cooperation in completing this survey is highly appreciated. Confidentiality is assured.

There are 54 questions in this survey

A: BACKGROUND/BIOGRAPHICAL INFORMATION

1 Name of institution:

Please choose **all** that apply:

- Durban University of Technology
- University of Cape Town
- University of Fort Hare
- University of KwaZulu-Natal
- University of Limpopo
- University of Pretoria
- University of South Africa (UNISA)
- University of the Western Cape
- University of Zululand
- Walter Sisulu University

2 Faculty/College/School:

Please choose **all** that apply:

- Accounting and Informatics
- Arts
- College of Human Sciences
- Education
- Engineering, Built Environment and Information Technology
- Humanities
- Humanities, Development and Social Sciences
- School of Social Sciences
- Other (please specify):

3 Department:

Please write your answer here:

4 Programme(s):

Please write your answer here:

5 Current designation:

Please write your answer here:

6 Number of years in this position:

Please choose **all** that apply:

- 0-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- More than 20 years

7 Total number of years of teaching experience:

Please choose **all** that apply:

- 0-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- More than 20 years

8 Highest academic qualification (e.g. PhD (Information Science)):

Please write your answer here:

9 List of subjects that you teach and level of study (e.g. Library Promotion - second level):

Please write your answer here:

B: TEACHING AND LEARNING

10 Teaching methods used: (You may select more than one option.)

Please choose **all** that apply:

- Face-to-face lectures
- Online classrooms (using learning management systems - e.g. BlackBoard, Moodle)
- Blended learning (using online and face-to-face methods)
- Distributed teaching (using iPod, e-mail, CD-ROMs, etc.)
- All of the above
- Other (please specify):

11 Have you used any learning management systems (LMS) (eg. Blackboard (WebCT), Moodle)? *

Please choose **only one** of the following:

- Yes
- No

12 If you answered YES to 11, please indicate the learning management system/s you have used. (You may select more than one option.)

Only answer this question if the following conditions are met:

° Answer was 'Yes' at question '11' (Have you used any learning management systems (LMS) (eg. Blackboard (WebCT), Moodle)?)

Please choose **all** that apply:

Blackboard (WebCT)

Moodle

Sakai

Other (please specify):

13 Comment on the advantages of using this particular LMS.

Only answer this question if the following conditions are met:

° Answer was 'Yes' at question '11' (Have you used any learning management systems (LMS) (eg. Blackboard (WebCT), Moodle)?)

Please write your answer here:

14 Comment on the disadvantages of using this particular LMS.

Only answer this question if the following conditions are met:

° Answer was 'Yes' at question '11' (Have you used any learning management systems (LMS) (eg. Blackboard (WebCT), Moodle?)

Please write your answer here:

C: EDUCATIONAL SUPPORT

15 Does your institution have a unit for educational support for teaching staff? *

Please choose **only one** of the following:

- Yes
- No
- Not sure

16 If you answered YES to 15, what kind of support is provided to teaching staff?

Only answer this question if the following conditions are met:

° Answer was 'Yes' at question '15' (Does your institution have a unit for educational support for teaching staff?)

Please write your answer here:

17 Does your institution have an educational support unit for students? *

Please choose **only one** of the following:

- Yes
- No
- Not sure

18 If you answered YES to 17, what kind of support is provided to students?

Only answer this question if the following conditions are met:

° Answer was 'Yes' at question '17' (Does your institution have an educational support unit for students?)

Please write your answer here:

19 Is there a unit at your institution that assists in developing technology-assisted learning systems? *

Please choose **only one** of the following:

- Yes
- No
- Not sure

20 If you answered YES to 19, what is the name of this unit?

Only answer this question if the following conditions are met:

° Answer was 'Yes' at question '19' (Is there a unit at your institution that assists in developing technology-assisted learning systems?)

Please write your answer here:

21 Briefly explain what technology-assisted teaching or learning interventions this unit has developed thus far.

Only answer this question if the following conditions are met:

° Answer was 'Yes' at question '19' (Is there a unit at your institution that assists in developing technology-assisted learning systems?)

Please write your answer here:

D: DEVELOPMENT OF TEACHING/LEARNING CONTENT

22 Who has primary responsibility for developing content for face-to-face delivery at your institution? (You may select more than one option.)

Please choose **all** that apply:

- Educational units at institution
- Educators teaching the subject
- Heads of Departments
- Programme Co-ordinators
- Subject Co-ordinators (if more than one person is teaching a subject)
- Other (please specify):

23 Who has primary responsibility for developing online learning systems at your institution? (You may select more than one option.)

Please choose **all** that apply:

- Educational units at institution
- Educators teaching the subject
- Heads of Departments
- Programme Co-ordinators
- Subject Co-ordinators (if more than one person is teaching a subject)
- Other (please specify):

E: FACILITIES FOR TEACHING AND LEARNING

24 Which of the following facilities/equipment are your lecture venues equipped with? (You may select more than one option.)

Please choose **all** that apply:

- Data projectors
- Laptops
- Personal computers
- Projection screens
- Sound systems
- Television screens
- Video recorders
- None of the above
- Other (please specify):

25 Are there dedicated computer facilities for your department/programme? *

Please choose **only one** of the following:

- Yes
- No

26 If you answered YES to question 25, are the computer facilities sufficient for all students registered for a particular subject? *

Only answer this question if the following conditions are met:

° Answer was 'Yes' at question '25' (Are there dedicated computer facilities for your department/programme?)

Please choose **only one** of the following:

Yes

No

27 If you answered YES to question 26, are the computer facilities able to handle the latest technology or the requirements with regard to learning management systems or other technology enhanced learning systems? *

Only answer this question if the following conditions are met:

° Answer was 'Yes' at question '26' (If you answered YES to question 18.1, are the computer facilities sufficient for all students registered for a particular subject?)

Please choose **only one** of the following:

Yes

No

28 The level of technical support and technical support training that you receive from your institution is:

Please choose **all** that apply:

Very Good

Good

Satisfactory

Poor

29 Do you often experience power cuts at your institution? *

Please choose **only one** of the following:

- Yes
- No

30 Does your institution provide Internet access to students? *

Please choose **only one** of the following:

- Yes
- No

31 Do the majority of your students have access to computers and the Internet out of campus? *

Please choose **only one** of the following:

- Yes
- No
- Not sure

**32 If you answered YES to 31, how is this access available?
(You may select more than one option.)**

Only answer this question if the following conditions are met:

° Answer was 'Yes' at question '31' (Do the majority of your students have access to computers and the Internet out of campus?)

Please choose **all** that apply:

- 3G cards
- Home Internet service providers
- Internet access at work
- Internet Café
- Internet via cellphones
- Other (please specify):

**33 Rate the computer literacy levels of students in the subjects/programme(s)
that you teach. Please indicate the subjects/programme(s) against the ratings.**

Please write your answer(s) here:

Good	<input type="text"/>
Average	<input type="text"/>
Poor	<input type="text"/>

34 How do you deal with students with different levels of computer literacy?

Please write your answer here:

F: LEARNING STYLES/THEORIES

35 Do you take into consideration the different learning styles of students when preparing instructional material for your subjects? *

Please choose **only one** of the following:

- Yes
- No

36 If you answered YES to 35, which of the following learning style instruments do you use to ascertain the learning styles of students? (You may select more than one option.)

Only answer this question if the following conditions are met:

° Answer was 'Yes' at question '35' (Do you take into consideration the different learning styles of students when preparing instructional material for your subjects?)

Please choose **all** that apply:

- Atlas: Learning Strategies (Learning Style)
- Fleming's VARK Learning Style Test
- Index to Learning Styles
- Jackson's Learning Styles Profiler (LSP)

- Learning Profile Test
- Learning Style Inventory (LSI)
- Online Self-scoring Questionnaires
- Other (please specify):

37 What learning theories do you incorporate in your teaching? (You may select more than one option.)

Please choose **all** that apply:

- Behaviourism (Behaviour of the student)
- Cognitivism (Internal processes of learning)
- Constructivism (Knowledge construction)
- Combination of the above
- Other (please specify):

38 Could you please indicate what value you have found in incorporating a particular or a combination of learning theory/ies in your teaching?

Please write your answer here:

G: USE OF TECHNOLOGY

39 If you are not currently using technology assisted teaching/ learning, would you consider using it in the future? *

Please choose **only one** of the following:

- Yes
- No
- Not applicable

40 Please elaborate on your response to question 39.

Only answer this question if the following conditions are met:

° Answer was 'Yes' or 'No' at question '39' (If you are not currently using technology assisted teaching/learning, would you consider using it in the future?)

Please write your answer here:

41 Have advances in telecommunication and social networking featuring Web 2.0 and Library 2.0 had an impact on your teaching? *

Please choose **only one** of the following:

- Yes
- No

42 If you answered YES to 41, please elaborate on how it has impacted on your teaching.

Only answer this question if the following conditions are met:

° Answer was 'Yes' at question '41' (Have advances in telecommunication and social networking featuring Web 2.0 and Library 2.0 had an impact on your teaching?)

Please write your answer here:

43 Have advances in technology and telecommunications had an impact on the LIS curriculum at your institution? *

Please choose **only one** of the following:

- Yes
- No

44 If you answered YES to 43, please elaborate on the extent of this impact on the LIS curriculum at your institution.

Only answer this question if the following conditions are met:

° Answer was 'Yes' at question '43' (Have advances in technology and telecommunications had an impact on the LIS curriculum at your institution?)

Please write your answer here:

H: COLLABORATION

45 Are you engaged in any collaborative teaching and learning interventions related to blended learning within your institution or with other institutions? *

Please choose **only one** of the following:

- Yes
- No

46 If you answered YES to 45 please indicate with which departments within your institution or in other institutions you have collaborated.

Only answer this question if the following conditions are met:

° Answer was 'Yes' at question '45' (Are you engaged in any collaborative teaching and learning interventions related to blended learning within your institution or with other institutions?)

Please write your answer here:

47 If you answered YES to 45, please indicate the nature of this collaboration.

Only answer this question if the following conditions are met:

° Answer was 'Yes' at question '45' (Are you engaged in any collaborative teaching and learning interventions related to blended learning within your institution or with other institutions?)

Please write your answer here:

I: ASSESSMENTS

48 Assessments in your subjects are submitted via: (You may select more than one option.)

Please choose **all** that apply:

- Computer conferencing
- Electronically via e-mail
- Hardcopy
- Online (using learning management systems - e.g. BlackBoard, Moodle)
- Orally
- Other (please specify):

49 Feedback on assessments are given via: (You may select more than one option.)

Please choose **all** that apply:

- Computer conferencing
- Electronically via e-mail
- Hardcopy
- Online (using learning management systems - e.g. BlackBoard, Moodle)
- Face-to-face
- Other (please specify):

J: BLENDED LEARNING FRAMEWORK/MODEL

50 Is there any blended learning framework or model (that is, a basic supporting guide that will help plan, develop, deliver, manage and evaluate blended learning interventions) being used at your institution presently? *

Please choose **only one** of the following:

- Yes
- No

51 If you answered YES to 50, please indicate if you are using the blended learning framework/model. *

Only answer this question if the following conditions are met:

° Answer was 'Yes' at question '50' (Is there any blended learning framework or model (that is, a basic supporting guide that will help plan, develop, deliver, manage and evaluate blended learning interventions) being used at your institution presently?)

Please choose **only one** of the following:

- Yes
- No

52 If you answered YES to 51, please elaborate on the strengths of the blended learning framework/model.

Only answer this question if the following conditions are met:

° Answer was 'Yes' at question '51' (If you answered YES to 50, please indicate if you are using the blended learning framework/model.)

Please write your answer here:

53 If you answered YES to 51 please elaborate on the weaknesses of the blended learning framework/model.

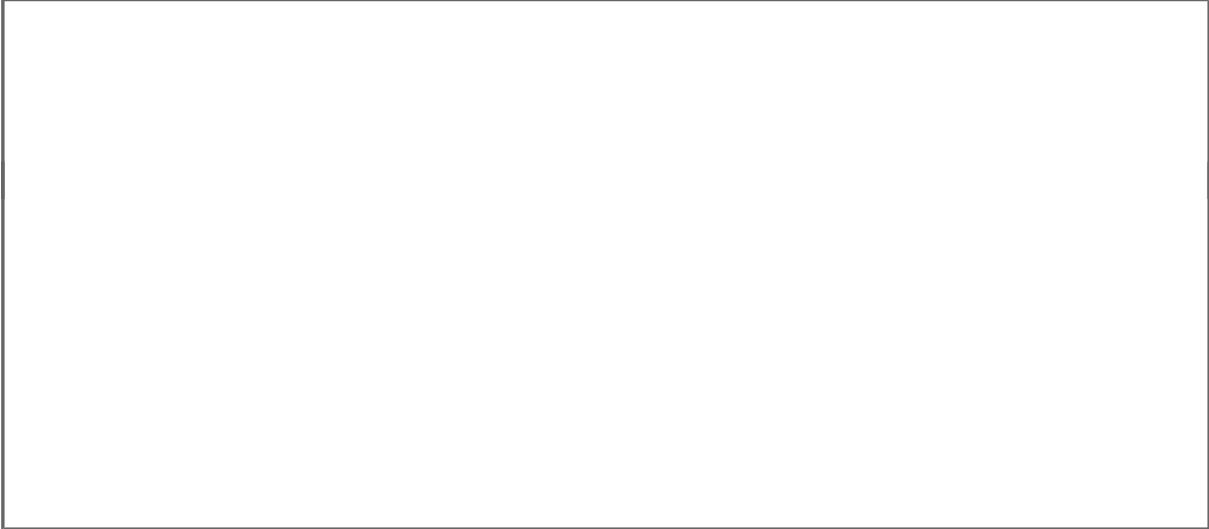
Only answer this question if the following conditions are met:

° Answer was 'Yes' at question '51' (If you answered YES to 50, please indicate if you are using the blended learning framework/model.)

Please write your answer here:

54 Please provide any other comments you would like to make regarding the issues raised in this questionnaire.

Please write your answer here:

A large, empty rectangular box with a thin black border, intended for the respondent to write their comments. It occupies most of the page's width and a significant portion of its height.

Submit your survey or fax your completed survey to: 0866741152

Thank you for completing this survey.

Appendix B

The development of a framework for blended learning in the delivery of Library and Information Science curricula at South African universities

SEMI-STRUCTURED INTERVIEW SCHEDULE FOR LIBRARY AND INFORMATION SCIENCE (LIS) EDUCATORS AT SOUTH AFRICAN UNIVERSITIES THAT OFFER LIS PROGRAMMES

A. BIOGRAPHICAL INFORMATION

1. Name of Institution:
2. Faculty:
3. Department:
4. Programme:.....
5. What is your current designation?.....

B. EDUCATIONAL BENEFITS OF BLENDED LEARNING

6. Has the use of blended learning transformed teaching and learning in the courses that you teach? [prompt, if yes] How has the use of blended learning transformed teaching and learning?
7. How do you use blended learning to support critical and reflective thinking? [prompt] Does the use of blended learning provide free and open dialogue, critical debate, negotiation and agreement (community of inquiry)? If yes, how is this achieved?
8. How has the use of blended learning impacted on teaching and learning in LIS education at your institution? [prompt] For example, motivation and satisfaction; reinforcement; student retention; pedagogy; access and flexibility and cost effectiveness.

C. LEARNING THEORIES AND LEARNING STYLES

9. How do learning theories and learning styles inform the educational design and facilitation of blended learning in your programme? [prompt] Please outline the benefits of aligning learning theories and learning styles with learning outcomes.

10. How are the different technology tools (Internet, text messaging, blogs, wikis, mobile learning devices, etc.) used to address the different learning styles when designing and facilitating blended learning in your programme?

D. PEDAGOGICAL ASPECTS OF BLENDED LEARNING

11. What pedagogical principles are used in blended learning design, development and delivery in the courses that you teach?
12. Have advances in technology impacted on your teaching in the LIS curriculum?
[prompt] How have ICTs impacted on communication and collaboration?

E. TEACHING METHODS

13. Has the number of years that you have been teaching impacted on your teaching methods? [prompt] What are the factors that guide what teaching methods you use?
14. What models/methods of teaching (face-to-face; web-based, distance formats, etc.) do you use in our teaching? [prompt] How do you align these models/methods with your learning outcomes?
15. Do you use a variety of modes (e.g. visual-verbal presentations, self-instructional, individual consultation, etc.) of delivery? If yes, how do you align these with the learning styles of your students?

F. DIALOGUE AND DISCUSSION/FACE-TO-FACE

16. How much of your teaching is facilitated by using dialogue and discussion? What are the advantages/benefits of using dialogue and discussion?

G. ONLINE LEARNING

17. The LIS sector is now deeply rooted in the digital environment. How is technology used to facilitate your teaching and learning in the courses that you teach? [prompt]
How has this impacted on teaching and learning in the courses that you teach?

H. BLENDED LEARNING

18. What are the current blended learning practices you use to engage students in higher-order learning (critical, creative and complex thinking) needed in higher education?

I. THEORY AND PRACTICE

19. Does theory take precedence over practical work in the courses that you teach? What assessments do you use to evaluate the theory and practical aspects in the courses that you teach?
20. How do you achieve interactive teaching and learning in the courses that you teach? [prompt] Has this produced changes in learning patterns and practices? If yes, please elaborate.

J. BLENDED LEARNING FRAMEWORK

21. What are the key pedagogical principles that need to be considered when developing a blended learning framework for LIS education?
22. What impact could a framework for blended learning have on teaching and learning in LIS education?

Appendix C

Consent form for LIS educators and institutional facilitators

The development of a framework for blended learning in the delivery of Library and Information Science curricula at South African universities

Department of Information and Corporate Management
Library and Information Studies Programme
Durban University of Technology
M.L. Sultan Campus
M.L. Sultan Road
Durban
4000

Dear Participant

This interview is part of a study being undertaken in fulfillment of the Doctor of Technology in Library and Information Studies at the Durban University of Technology. The study's promoter is Associate Professor Jaya Raju and it is entitled: **The development of a framework for blended learning in the delivery of Library and Information Science curricula at South African universities**. This study explores the educational and pedagogical aspects of blended learning for the purposes of developing a framework for designing and implementing blended learning in LIS education. The study also explores the benefits of using more transformative and interactive teaching and learning practices in LIS education.

Your valued participation in this study would be much appreciated.

Yours sincerely

.....

Mogiveny Rajkoomar

E-mail: mogier@dut.ac.za

Having been asked to participate in this study, I.....give consent to Mogiveny Rajkoomar to interview me. I understand that the research information gathered will be treated confidentially, anonymously and that participation is voluntary and may be withdrawn at any time. I agree to participate by answering questions and offering opinions regarding the above topic. I give permission for the data to be recorded with the use of a dictaphone to ensure that valuable data is not lost.

Date:.....

Appendix D

The development of a framework for blended learning in the delivery of Library and Information Science curricula at South African universities

SEMI-STRUCTURED TELEPHONE INTERVIEW SCHEDULE FOR FACILITATORS OF BLENDED LEARNING INTERVENTIONS AT SOUTH AFRICAN UNIVERSITIES THAT OFFER LIBRARY AND INFORMATION SCIENCE (LIS) PROGRAMMES

Name of Institution.....

Department.....

Current designation.....

1. What academic development opportunities are offered to academic staff with regard to the use of blended learning interventions at your institution? [Prompt] Please elaborate how these academic development programmes offered impacted on teaching and learning at your institution?
2. What technical support is offered to academic staff at your institution to facilitate blended learning? [Prompt] e.g. support with web-based teaching; assessor training; curriculum development, online assessments, etc.?
3. What support is given to academics at your institution with regard to design and development of course material that require the use of educational technology like Learning Management Systems (LMS); podcasting; mobile learning, blogs and wikis etc.? Are learning theories and the various learning styles incorporated in the design and development of course material that use educational technology?
4. What educational and technical support in the use of educational technologies used in blended learning interventions, are offered to students enrolled at your institution?

Appendix E

The development of a framework for blended learning in the delivery of Library and Information Science curricula at South African universities

INFORMATION SHEET – FOCUS GROUP DISCUSSION WITH LIS STUDENTS

Definition of blended learning:

Blended learning is learning that is facilitated by the effective combination of different modes of delivery, models of teaching and styles of learning, and founded on transparent communication amongst all parties involved with the course (Heinze and Proctor 2004). It constitutes a combining of online and face-to-face instruction.

Learning styles

Learning Styles can be defined as the combination of cognitive, emotional, and physiological factors that determine each individual's most effective process for learning. Examples include:

- *Sensing and intuitive learners.* Sensing learners like learning facts while intuitive learners often prefer discovering possibilities and relationships. Sensors do not like courses that have no apparent connection to the real world while intuitors do not like courses that involve a lot of memorization and routine calculations.
- *Visual and verbal learners.* Visual learners remember best what they see e.g. pictures, diagrams, flowcharts, time lines, films and demonstrations. Verbal learners get more out of words such as written and spoken explanations. More learning takes place when information is presented both visually and verbally.
- *Sequential and global learners.* Sequential learners tend to gain understanding in linear steps, with each step following logically from the previous one. Global learners tend to learn in large jumps, absorbing material randomly without seeing the connections and then suddenly making the connection.

(Association for Quality and Participation 2003: 31-32)

Presentation of initial findings from survey questionnaire to LIS educators and literature review

- Blended learning is effective in getting students to participate.
- Blended learning provides greater opportunities for students to comprehend and extend the knowledge that is presented.
- The use of blended learning resources may produce changes in learning patterns and practices.
- Students consider blended learning to be a useful experience for understanding and learning subject content. It also contributed to increasing their motivation to study the subject.
- Students preferred face-to-face (FTF) to e-learning. Students' perception is that the e-learning activities complement FTF activities but cannot replace them.
- Blended learning offers a distinct advantage in supporting higher levels of learning through critical discourse and reflective thinking.
- Blended learning supports the benefits of e-learning including cost reductions, time efficiency and location convenience for the students as well as the essential one-on-one personal understanding and motivation that face to face presents.
- The benefits for higher education institutions include facilitation of easier communication and interaction.
- Blended learning provides increased learner control, self-directedness, and requires learners to take more responsibility for their learning.
- The online environment also fosters collaborative activities and assignments.

Appendix F

Consent form for LIS students participating in focus group discussions

The development of a framework for blended learning in the delivery of Library and Information Science curricula at South African universities

Department of Information and Corporate Management
Library and Information Studies Programme
Durban University of Technology
M.L. Sultan Campus
M.L. Sultan Road
Durban
4000

Dear Participant

This focus group discussion is part of a study being undertaken in fulfillment of the Doctor of Technology in Library and Information Studies at the Durban University of Technology. The study’s promoter is Associate Professor Jaya Raju and it is entitled: **The development of a framework for blended learning in the delivery of Library and Information Science curricula at South African universities**. This study explores the educational and pedagogical aspects of blended learning for the purposes of developing a framework for designing and implementing blended learning in LIS education. The study also explores the benefits of using more transformative and interactive teaching and learning practices in LIS education.

Your participation in this study would be much appreciated.

Yours sincerely

.....

Mogiveny Rajkoomar

E-mail: mogier@dut.ac.za

I.....consent to participation in a focus group discussion (facilitated by Mogiveny Rajkoomar) which will last for about two hours. I understand that the research information gathered will be treated confidentially, anonymously and that participation is voluntary and may be withdrawn at any time. I agree to participate by responding to questions/statements and offering opinions regarding the above topic. I give permission to be recorded with the use of a dictaphone to ensure that valuable data is not lost.

Date:.....

Appendix G

The development of a framework for blended learning in the delivery of Library and Information Science curricula at South African universities

FOCUS GROUP DISCUSSION SCHEDULE FOR LIBRARY AND INFORMATION SCIENCE (LIS) STUDENTS EXPOSED TO BLENDED LEARNING INTERVENTION

Introduction

Hello. My name is Mogie Rajkoomar. I would like to start off by thanking each of you for taking the time to participate in this focus group discussion. We will be here for about an hour-and-a half to two hours.

The reason we are here today is to obtain your opinions and attitudes about issues related to the use of blended learning in Library and Information Science (LIS) curricula. Blended learning is learning that is facilitated by the effective combination of different modes of delivery, models of teaching and styles of learning, and founded on transparent communication amongst all parties involved with the course. It constitutes a combining of online and face-to-face instruction. [At this point students would be given an information sheet of background information and would be given 10 minutes to read]

I would be leading the discussion today. I am not here to convince you of anything or try and sway your opinion. My intention is to pose questions to the group and then encourage and facilitate the discussion. Opinions expressed would be treated in confidence. All responses would remain anonymous. Your participation is voluntary and you have the right to withdraw your participation at any stage. Your valuable responses would assist in identifying best classroom practices or face-to-face learning and best practices in online learning for maximum educational benefits.

(Ascertain that there are no objections to the use of an audio recorder; then switch it on.)

Ground rules

To allow our conversation to flow more freely, I'd like to go over some ground rules.

- Only one person speaks at a time.
- Please avoid side conversations.

- Everyone does not have to answer every single question, but I'd like to hear from each of you today as the discussion progresses.
- This is a confidential discussion in that I would not report your names or who said what to the university. As indicated earlier, names of participants would not be included in the reporting of this discussion. It also means that, except for the report of the findings that would be written, what is said in this room stays in this room.
- I stress confidentiality because I would like an open discussion. I would like all of you to feel free to comment on each other's remarks without fear that your comments would be repeated later or possibly taken out of context.
- Remember there are no 'wrong answers', just different opinions. Say what is true for you, even if you are the only one who feels that way. Do not let the group sway you. But if you do change your mind, just let me know.
- Let me know if you need to take a bathroom break.

Ice breaker

Each person must make three statements about themselves, one of which is not true (e.g. I have three brothers, I was born in Australia, I have a bicycle).
The group must guess, or vote on, which statement is not true.

General question

1. What blended learning interventions are offered in your programme?
2. Is everyone familiar with the different modes of delivery, models of teaching and styles of learning?

(Here I will firstly get their responses and then elaborate/clarify the terms if there is some confusion on the definitions.)

Models/methods of teaching (face-to-face; web-based, distance formats, etc.)

Modes of delivery (e.g. visual-verbal presentations, self-instructional, individual consultation, etc.)

Learning Styles - can be defined as the combination of cognitive, emotional, and physiological factors that determine each individual's most effective process for learning. Examples include:

- *Sensing and intuitive learners.* Sensing learners like learning facts while intuitive learners often prefer discovering possibilities and relationships. Sensors do not like courses that have no apparent connection to the real world while intuitors do not like courses that involve a lot of memorization and routine calculations.
- *Visual and verbal learners.* Visual learners remember best what they see e.g. pictures, diagrams, flowcharts, time lines, films and demonstrations. Verbal learners get more out of words such as written and spoken explanations. More learning takes place when information is presented both visually and verbally.
- *Sequential and global learners.* Sequential learners tend to gain understanding in linear steps, with each step following logically from the previous one. Global learners tend to learn in large jumps, absorbing material randomly without seeing the connections and then suddenly making the connection.

(Association for Quality and Participation 2003: 31-32). **This will also be provided in the information sheet.**

Specific questions

3. What aspects of face-to-face interaction are most effective for understanding and engaging in course content?
4. What aspects of online/web-based/e-learning aspects are most effective in teaching and learning LIS content?
5. Discuss the educational benefits of blended learning in LIS education? [prompt] With regards re-inforcement of course material; motivation and satisfaction; completing your degree/diploma in the required period of time; teaching in LIS; access and flexibility and cost effectiveness ; communication and assessments.
6. Do you have an idea of what your learning style is? What methods of teaching would be most suitable for particular learning styles?
7. What innovative or transformative teaching and learning would you like to see happening in LIS education? [prompt] For example, the use of different technology tools (Internet, text messaging, blogs, wikis, mobile learning devices etc.)

Closing

Thanks for participating in this discussion on blended learning. Your comments have given me valuable insights that would assist in identifying best teaching and learning practices for maximum educational benefits in LIS education.

FACULTY OF ACCOUNTING AND INFORMATICS

To: Ms M Rajkoomar

From: Prof T Nepal

Date: 3 May 2010

Dear Ms Rajkoomar,

RE: ETHICS CLEARANCE

“The Development of a framework for blended learning in the delivery of Library and Information Science curricula at South African Universities”

This serves to inform you that a request in respect of the above study was tabled as the Accounting and Informatics FRC on 05 June 2009. I am pleased to inform you that the Accounting and Informatics FRC has granted your request for ethics clearance at the Durban University of Technology.

May I take this opportunity to wish you success in your study.

Regards


Prof T Nepal

Executive Dean: Faculty of Accounting and Informatics
Durban University of Technology
P O Box 1334, Durban, South Africa, 4000.
Tel.: 03103735597 Fax: 031-3735593
Email: Nepal@dut.ac.za

Appendix I



41/43 Centenary Road
Durban
4001

To: Whom it may concern

RE: PERMISSION TO CONDUCT RESEARCH

I am currently lecturing in the Library and Information Studies Programme at the Durban University of Technology (DUT). I am undertaking a study for the Doctor of Technology in Library and Information Studies at the DUT. The study's major promoter is Professor Jaya Raju and it is entitled: **The development of a framework for blended learning in the delivery of Library and Information Science (LIS) curricula at South African universities.** The purpose of the study is to explore the educational and pedagogical benefits of blended learning with the aim of developing a framework for effective and meaningful blended learning in the delivery of LIS curricula at South African universities.

I would like to undertake an initial exploratory survey with LIS educators to ascertain the nature of current practices in the delivery of LIS curricula at South African universities. Interviews with selected LIS educators and focus group discussions with selected LIS students and facilitators of blended learning interventions may also need to be conducted at a later stage.

Ethics approval for this study has been granted by the Durban University of Technology. The results of the survey will be stored on a secure server and access will be restricted to the researcher and supervisors. Please find enclosed a copy of the Web-based survey questionnaire which I would like to administer at your institution, as well as other necessary documentation requested by your institution.

Sincerely

Mogie Rajkoomar

Durban University of Technology
Library and Information Studies Programme
Tel: (031) 3736776
Mobile: 0846241062
Email: mogier@dut.ac.za