

A Framework Using Blended Learning for Innovative Teaching and Learning

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ABSTRACT

Blended learning has the propensity to provide more engaged learning experiences while recognizing the potential of ICTs. This paper reports on the findings of a doctoral study that 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 study adopted a mixed method research approach using a fully mixed dominant status design. The theoretical framework that underpinned the study included learning theories, learning styles as well as blended learning models relating to higher education. The significance of this study lies in the purposive use of blended learning that is facilitated by the effective combination of different modes of delivery, methods of teaching, learning theories, learning styles and competencies that are founded on effective communication and collaboration amongst all participants of the blended learning process. The paper presents a framework for blended delivery of LIS curricula in South African universities which emanated from this study.

INTRODUCTION

There are various 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. Advances in ICTs also have a profound impact in the Library and Information Science (LIS) field and it confirms that the information environment is continually changing with advances in telecommunications and social networking featuring Web 2.0 and Library 2.0. 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 also calls for a transformation of the teaching and learning environments in higher education settings that should be facilitated by an effective combination of various modes of delivery, models of teaching and styles of learning that are achieved through effective communication ^[1]. The objective of the study being reported 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 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?

THE CONCEPT OF 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 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 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^[2]. 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 with the extension identified, for the present study.

THEORETICAL FRAMEWORK

The theoretical framework enabled the researcher to explicitly identify the point of entry into the research. 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, was crucial in the development, design and delivery of blended learning interventions with a focus on chosen pedagogical principles. The theoretical framework that underpinned the study included various learning theories, learning styles as well as blended learning models relating to the higher education environment.

Learning Theories

Behaviorism, cognitivism and constructivism may be seen as traditional learning paradigms that are used as benchmarks against which learning processes are measured. There is a need to transform education from a teacher-centered behavioristic model to a learner-centered constructivist model by empowering educators to empower learners through the integration of ICTs into all aspects of the teaching and learning process^[3,4]. The shift from behaviorism to more constructivist views of learning changes how one conceptualizes knowledge creation, where participation is emphasized rather than acquisition. However, the impact of technological advancements on teaching and learning needs to be taken into consideration. Although behaviorism, cognitivism and constructivism were developed at a time when teaching and learning were not impacted upon by technology^[5]. These theories have not become obsolete; they need to be used in a very different way to incorporate the present teaching and learning environment. The learning environment comprises of elements of behavioral, cognitive, social and constructivist learning theories. The learning landscapes in the digital age are networked, social and technological. Central to connectivism, a learning theory for the digital environment is the idea that learning takes place across networked communities and information technologies.

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 was 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 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^[6]. 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 by aligning the learning outcomes to appropriate learning theories. It is also important when designing blended learning instructional content that this should cater for different learning styles, which also need to be aligned the learning outcomes and 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.

Learning Styles

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. Although these preferences may be varied they can be adapted by the student to adjust to divergent teaching and instructional settings and can also be accommodated by educators in their style of presentation^[4]. 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. The importance of applying learning styles is to match students' preferences with the design and type of teaching instruction in order to improve students' satisfaction and other outcomes such as students' performance. Students and educators need a starting place for thinking about and understanding how individuals learn. Educators' understanding of students' learning styles can improve their choice of instructional delivery. 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. 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 learning style preferences at all times. Felder 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^[7,8].

It was found that when the teaching style is adapted to the learner by using both the behaviorist and constructivist approach to the learning/personality style, the amount of learning will increase. 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.

Models 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 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^[9-12]. A coherent framework avoids the "tyranny of adopting clever techniques" and the distortion that may arise from the separation of theory and practice. Khan's Octagonal Framework and the Community of Inquiry (CoI) frameworks can be used in a blended learning environment.

Badrul Khan's e-learning framework which is also referred to as Khan's Octagonal Framework provides a framework that enables educators to select appropriate ingredients for flexible learning environments. While Khan's Octagonal Framework focuses primarily on e-learning, Singh 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. The framework consists of eight dimensions, namely: institutional, pedagogical, technological, interface design, evaluation, management, resource support and ethical^[13]. 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.

The Community of Inquiry (CoI) framework guides the use of instructional technologies in "creating and sustaining deep and meaningful learning through reflection and discourse in online and blended learning environments. The three interdependent elements present in the CoI framework are teaching presence, cognitive presence and social presence. In the present higher education context in South Africa, 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^[14-16].

SELECTED LITERATURE

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. Higher educational institutions (HEIs) have incorporated technology to improve instruction and have used substantial resources to integrate technological infrastructure into existing classroom facilities. The needs of students are constantly changing and they expect technology-rich and flexible learning opportunities. According to Lewin 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^[17].

The literature highlights many benefits of blended learning for higher education institutions, and these include: facilitation of easier communication and interaction motivation and metacognition enhanced course delivery with improvement in cognitive and reflective skills improved retention and identification of 'at risk' students improved pedagogy; increased access and flexibility

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and increased cost effectiveness (Graham 2004); blended learning was found to be preferred over the traditional lecture format with students reporting a higher level of class satisfaction 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. Furthermore, students indicated that they are more likely to enroll in courses if offered using blended learning^[11,12]. This could maintain or increase enrollments and the blended learning environment can result in marked improvements in pass rates and positive student evaluations.

Yukawa purports that using blended learning in a classroom community of practice supports “active engagement and collaborative learning” and also exposes LIS students to skills in librarianship, information technology and information design that are needed by blended librarians. Yukawa reiterates that the core competencies of LIS professionals are being debated, as they are required to have a higher level synthesis of theoretical understanding and professional relevance within LIS education^[18]. 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.

RESEARCH METHODOLOGY

The philosophical foundation of the study was based on the research objective of the study, the research questions and the research context, all of which guided the researcher to choose pragmatism and interpretivism as the epistemological lenses for this study^[19,20]. The focus of pragmatism is the emphasis on the research problem and the use of approaches to understand the research problem while interpretivism adopts relativist ontology that is socially constructed and there are multiple interpretations of constructs that can be made in an inquiry.

In the context of comprehensive literature reviewed for the study and the theory informing it, a two-phase project was undertaken in which the researcher collected quantitative and qualitative data in an online Web questionnaire for the first phase. The Web survey was administered to 55 LIS educators of which 39 (71%) responded^[11]. 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 fifteen (15) LIS educators, semi-structured interviews with ten institutional facilitators of blended learning and focus group discussions (six in total) with LIS students.

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 with 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^[21].

The mixed method research design used in this study could be classified as a “fully mixed sequential dominant status design”. This design involves mixing “quantitative and qualitative research within one or more of, or across the stages of the research process”. 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^[22,23]. 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.

DISCUSSION

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 maximize the potential of blended learning while still being responsive to the diverse student populations at South African higher education institutions.

The finding from the study with regard to educational benefits of blended learning included easier communication with students and easier distribution of course material to large groups of students. LIS students indicated 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 Learning Management System (LMS). Both LIS educators and students indicated that submission of and feedbacks on assessments are better to administer. According to Mason 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. LIS students in the focus group discussions indicated that they preferred the audio and video resources employed in blended learning. Findings

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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^[24-28].

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. The Community of Inquiry (CoI) framework advocated by Garrison and Akyol 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”. The main contribution of the cognitive presence is its “affordance of collaborative information discovery and creation”. 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.

Hughes 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”. Student retention is important for the financial stability of the institution as well as for quality of the educational experience of students. LIS educators who spoke to the student retention issue indicated that intake in LIS programmes, globally, tend to be low and therefore LIS programmes need to be more interesting in order to retain students. 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. LIS educators indicated 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^[26-29]. The use of instructional technology is one of the means of motivating students to sustain them in higher education through to higher levels of study. This could also lead to higher retention rates of students in higher education. Klein, Noe and Wang agree that students in the blended learning environment are more motivated to learn, they engage in more meta-cognition and they achieve higher course grades than students in the classroom condition. Klein, Noe and Wang 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. Fifty percent (50%) of the LIS educators interviewed were of the view that educators should have an educational theory background to enable them to motivate students. Yet it was evident when perusing the academic qualifications of LIS educators that none of the LIS educators surveyed indicated having any qualification pertaining to education or teaching as shown in **(Figure 1)**.

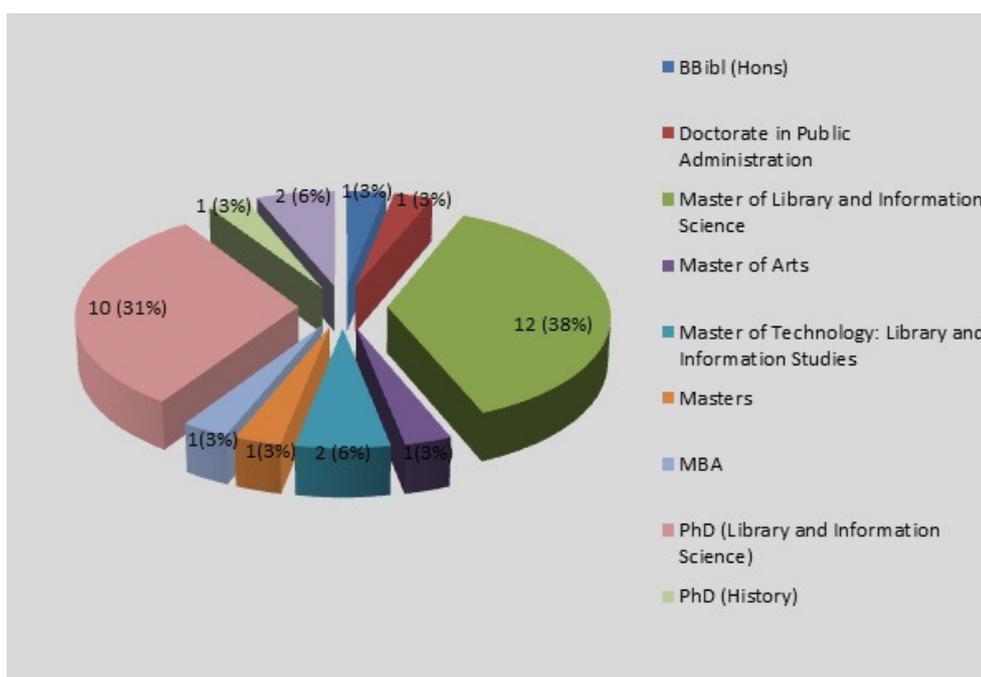


Figure 1. Academic qualifications of LIS educators

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Minishi agrees that very few LIS educators 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”.

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. 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) [30-34]. The findings of this study from the focus group discussions with LIS students 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 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”. 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.

Garrison and Vaughan state that a theoretical foundation provides a means to shape the educator’s practice as well as reflect upon and make sense of outcomes; 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, blended learning interventions [35-38]. 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.

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 as shown in (Figure 2).

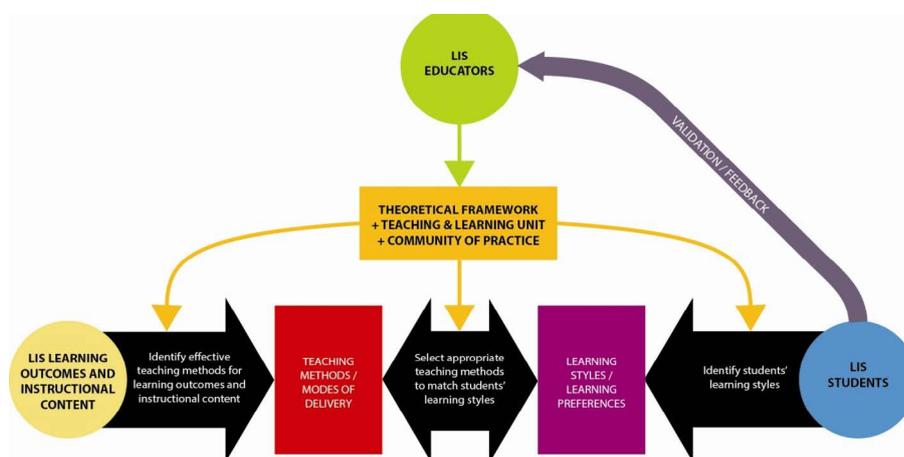


Figure 2. Proposed framework for blended delivery of LIS curricula

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.

CONCLUSION

• 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.

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- While most LIS educators surveyed indicated that they used a combination of learning theories (behaviorism, 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. The learning theories, the learning styles as well as the blended learning models. Singh's adaptation of Khan's framework and the Community of Inquiry (CoI) framework) should inform the teaching methods, mode of delivery for every blended learning teaching and learning intervention. Further, LIS educators need to align their learning outcomes to appropriate teaching methods and modes of delivery and align this to cater students' learning styles 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-centered 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-centered 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 classification or Jones' 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.

Critical thinking is one of the benefits of blended learning emanating from the study reported in this paper. The Community of Inquiry (CoI) framework, metacognition and self-regulated learning can be used to advocate critical and reflective thinking in blended learning environments. The study also indicated that most LIS educators do not have formal 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 can provide pedagogical assistance such as the use of learning theories and learning styles in the design of course material and blended learning interventions. This may improve student satisfaction and the learning outcomes of the course, and ultimately students' performances. LIS educators, institutional instructional designers (facilitators of blended learning) could form Communities of Practice to share knowledge; the practices of LIS educators together with educational designers' ability to apply technologies appropriately in the teaching and learning process could together contribute towards developing rich blended learning intervention for LIS education and training. Online assessments 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.

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The framework for blended learning emanating from this study takes into consideration theoretical and practical aspects affecting the design of blended learning interventions and is also cognizant 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 possibly even other disciplines) especially in the current digital age where the 21st century 'net' generation student is comfortable in the online environment.

REFERENCES

1. Aflip LBA. Motivating adult learners using blended learning in higher education institution. *Research world journal of arts, science and commerce*. 2014;3:35-42.
2. Allan B. *Blended learning tools for teaching and training*. London: Facet Publishing. 2007.
3. Allen IE and Garret R. *Blending in the extent and promise of blended education in the United States*. Needham, Massachusetts: Sloan Consortium. 2007.
4. Association for Quality and Participation. *The journal for quality and participation*. 2003;31-32.
5. Bawden D, et al. *Towards Curriculum 2.0: library information education for a Web 2.0 world*. *Library and information research*. 2007;31:14-25.
6. Beyers RN. A five dimensional model for educating the Net generation. *Educational Technology and Society*. 2009;12:218-227.
7. Boyle T, et al. Using blended learning to improve student success rates in learning to program. *Journal of educational media*. 2003;28:165-178.
8. Butler T and Pinto ZG. Students Learning Styles and their preferences for online instructional methods. *Journal of educational technology systems*. 2006;34:216-217.
9. Chen CC and Jones KT. Blended learning vs. traditional classroom settings: assessing effectiveness and student perceptions in a MBA accounting course. *The journal of educators*. 2007;4:1-15.
10. Delaney JG. Students perceptions of effective teaching in higher education. *St. John Distance Education and Learning Technologies*. 2010.
11. Dunaway MK. Connectivism: learning theory and pedagogical practice for networked information landscapes. 2011;39:675-685.
12. Fang AL. Utilization of learning styles in dental curriculum development. *The New York state dental journal*. 2002;68:34-38.
13. Felder RM. Are learning styles invalid? *On-course newsletter*. 2010.
14. Felder RM and Soloman BA. *Learning styles and strategies*. 2014.
15. Garrison DR and Akyol Z. Role of instructional technology in the transformation of higher education. *Journal of computers in higher education*. 2009;21:19-30.
16. Garrison, et al. Critical thinking, cognitive presence and computer conferencing in distance education. *American journal of distance education*. 2001;15:7-23.
17. Garrison DR and Vaughan ND. *Blended learning in higher education: framework, principles and guidelines*. San Francisco: Jossey-Bass. 2008.
18. Graham CR. *Blended learning systems: Definition, Current trends and Future directions*. 2004.
19. Heinze A and Procter C. Reflections on the use of blended learning. Paper presented at: The Conference on education in a changing environment. 2004.
20. Hughes G. Using blended learning to increase learner support and improve retention. *Teaching in higher education*. 2007;12:349-363.
21. Khan B. *A framework for E-learning*. 2003.
22. Klein HJ, et al. Motivation to learn and course outcomes: the impact of delivery mode, learning goal orientation and perceived barriers and enablers. *Personnel psychology*. 2006;59:665-702.
23. Leech NL and Onwuegbuzie AJ. A typology of mixed method research designs. *Qualitative quantitative*. 2009;43:265-275.
24. Liegle J and Janicki TN. The effect of learning styles on the navigation needs of Web-based learners. *Computers in human behavior*. 2006;22:885-898.

Research & Reviews: Journal of Educational Studies

25. Lewin T. Colleges adapt online courses to ease burden. The New York Times. 2013
26. Mason R. Models of online courses. ALN magazine.1998.
27. Melton BF, et al. Achievement and satisfaction in blended learning vs. traditional general health course designs. International journal for the scholarship for teaching and learning. 2009.
28. Minishi MM. The Higher Education Qualification Framework and the changing environment of LIS education and training in South Africa: some observations. South African journal of libraries and information science. 2009;75:148-158.
29. Nel E and Wilkinson AC. Enhancing collaborative learning in a blended learning environment: applying a process models. Systematic practice and action research. 2006;19:553-576.
30. Pang K. Instructional design strategies for effective blended learning. Journal of interactive instruction development. 2008;20:3-8.
31. Pratt DD. Blended learning as a response to change in a merged technikon: an account of three modes of delivery in a web-based communication skills semester course designed for engineering students at DIT. 2003.
32. Rajkoomar M. The development of a framework for blended learning in the delivery of Library and Information Science curricula at South African universities. Ph.D Thesis. Durban University of Technology. 2015.
33. Rohleder P, et al. Students evaluations of the use of e-learning in a collaborative project between two South African universities. Higher education. 2008;56:95-107.
34. Saeed N, et al. Emerging web technologies in higher education: a case of incorporating blogs, podcasts and social bookmarks in a web programming course based on students learning styles and technology preferences. Educational technology and society. 2009;12:98-109.
35. Sfard A. On two metaphors for learning and the dangers of choosing just one. Educational researcher. 1998;27:4-13.
36. Siemens G. Connectivism: a learning theory for the digital age. 2004.
37. Singh H. Building effective learning programs. Educational technology. 2003;43:51-54.
38. Yukawa J. Communities of practice for blended learning: towards an integrated model for LIS education. Journal of education for Library and Information Science. 2010;51:54-75.