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Abstract

This article provides an overview of the current trends in information and communication technology affecting library services and recommends how, because of these trends, library and information science (LIS) curricula should turn an inquisitive, interdisciplinary eye toward the field of educational technology. Gaps in current LIS professional training and practice are cited, curriculum standards in LIS and educational technology programs are described and compared, and examples are presented to demonstrate how educational technology pedagogy and practice help to successfully augment library skills, service, and practice.

Technology, Change, Professional Curricula, and Expanding the Core

Information and communication technologies (ICT) are now ubiquitous and will continue to evolve regularly over time. Coupled with this familiar mantra is professional literature revealing that current library professional and support staff who deal with these ICT are not comfortable with them, don't know how to use them effectively, and often can't employ them efficiently or to the best learning and service advantages possible. (Skene, 2004, p. 19). Amidst this confluence of battling realities we must recognize that effective teaching for students and all learners is greatly impacted by ICT today. Warnken (2004a) describes what is driving the essential shift that has affected our profession. "Librarians have traditionally seen their instructional role as one of teaching informational processes, not technological skills. However, in order for students to successfully complete the research process, they must first understand and be able to effectively use technology" (Technologies Impact section, ¶ 13).

It follows that shifts in the profession under this new ICT environment include the need for librarians to be able to understand and use ICT to build dynamic and effective

learning tools and environments. We also need to be able to collaborate with other teachers and faculty while looking toward integrating information literacy across the curriculum. Both Perry (2004, p. 32), and Warnken (2004b, Change Begets section, ¶ 1) strengthen this argument by noting how adoption of ICT by librarians is a natural progression as information and learning environments merge. Furthermore, the problems of teaching faculty also plague teaching librarians as we and the products of our work move front and center in the course of modern academic librarianship. Perry (2004) states that there are "...faculty concerns about overcoming the barriers to implementation of these technologies into their curricula. Perceived barriers included their own lack of skill, equipment, and time. Further, the wide range of skill levels among faculty was viewed as hindering communication with departmental colleagues; many individuals simply did not feel comfortable with the culture of educational technology" (p. 31). Perhaps knowing that both sets of credentialed professionals are experiencing similar ICT challenges can lend comfort while reaching toward successful teaming for teaching.

Buttlar & DuMont (1996) hold that librarianship must turn its eyes toward, "breadth of curriculum and pedagogical technology, greater attention to external environment, recognition that libraries are increasingly services-oriented, integration of curricula across functional areas, and additional education in interpersonal and communication skills." Librarians need to more fully understand teaching and learning theories, instructional techniques, pedagogy, and again, collaboration for the goal of effective teaching. Bell and Shank (2004) indicate that the art of teaching and instructional design theory and practice are areas which are now ripe for cross-disciplinary examination. They further support that, "Many members of our profession are woefully deficient in their knowledge of how learning takes place, how structures for effective learning are designed, and how learning outcomes are assessed" (p. 373).

When viewing the current state of librarianship through a lens of career preparation or professional training, other barriers to success quickly become evident. Sproles and Ratledge (2004) indicate a steady decline in on-the-job training and that, "new hires in professional positions do not receive the amount of training as in years past." (Conclusion section, ¶ 5). They further indicate that, "applicants seeking to enter the profession without paraprofessional experience will find themselves at a major disadvantage." (Conclusion section, ¶ 5). This idea then becomes alarming as employers demand pre-employment experience. Teaching and instruction only begin the list of new areas of expertise that today's learning environment demands of librarianship. Yet, these are the areas of knowledge that Pagell (2005, p. 35) as well as Sproles and Ratledge (2004, Conclusion section, ¶ 6), indicate are beyond the current library and information science curricula.

Pushing at the Walls

On November 5, 2004, at a meeting sponsored by the Metropolitan New York Chapter of the American Society for Information Science & Technology, LIS Deans, library employers and students/new employees considered the "The Future of Library Information Education." One of the prominent themes of the discussion was that, even as the breadth of the profession has expanded dramatically under the demands of the technology-driven information economy, the 36-credit LIS programs have little space to accommodate solid introduction of traditional as well as new content areas. Hence, internships, on-the-job training, and continuing education need to pick up the slack. As discussed above, while these potential "solutions" may provide good supplementary offerings in support of and/or buttressing a currently anemic professional education, they will not assuage the current crisis state of the core LIS curriculum.

This "pushing at the walls" of the library educational program is echoed by Saracevic and Dalbello (2001) in their survey of digital library education. They posit that the very existence of digital libraries and the need to prepare professionals to work with them effectively is "...forcing educational choices." (Introduction section, ¶ 1). As underscored here, one of the main factors challenging the LIS educational programs is the accommodation of learning and teaching pedagogies related to technologies that are now constantly changing and affecting our service industry. The Saracevic/Dalbello (2001) study further demonstrates how education for digital library technologies are attached to, or in some cases, integrated into the LIS curricula in a segmented way via program tracks.

But as library and librarian roles shift, learning the technologies themselves, (and thus technology literacy), is only half of our developmental battle. Indeed, the curricula need to absorb even more concepts and practices borrowed from other disciplines. Perhaps it's time to consider building additions onto all of our LIS programs in order to avoid "forcing educational choices," while preparing for our expanding and dynamic profession.

Cross-Disciplinary Possibilities

One sector of the field of librarianship has taken early steps at instituting cross-disciplinary partnerships in order to strengthen the education of our professionals. Since 1988 the American Association of School Librarians (AASL) has worked in tandem with the National Council for Accreditation of Teacher Education (NCATE) to establish school library media specialist (SLMS) standards for elementary and secondary education credentials. Essentially, these standards cover the following categories: the use of information and ideas, knowledge of teaching and learning concepts, (including information literacy), ideas related to leadership and collaboration, and program

administration. Central ideas espoused in the first category include literacy and reading, efficient and ethical information-seeking behavior, access to information and provision of stimulating learning environments. Ideas covered within the category of teaching and learning include collaboration with classroom teachers, knowledge of learner characteristics, and knowledge of teaching methods. These professional competencies will support teaching that enables the development of student fluency with information technology including curriculum integration of information literacy skills. Leadership and collaboration ideas include SLMS participation in professional fora, and leadership in collaboration with teachers at the local level. This will assure an understanding of current educational and information technology trends and allow implementation of industry best practices on the job. Finally, program administration ideas include the ability to evaluate and effectively manage collections, services and resources in support of the learning endeavor (American Association of School Librarians, 1998).

The accrediting body maintains that every school library media specialist candidate has, "... the potential to be effective teachers as well as effective information specialists." (American Library Association's American Association of School Librarians, 2005, Conceptual Framework section, ¶ 1). This progressive philosophy and the resulting shift in the orientation of the training of school library media specialists toward integrative information literacy standards is a fine example of the pedagogical shifts that the full LIS curricular effort should be planning and embracing. This author strongly suggests that the remaining sectors of librarianship heed the wisdom of pursuing such cross-disciplinary strengthening of educational efforts on behalf of future professionals in the library field.

Another good place for the LIS field to investigate cross-disciplinary, synergistic ideas is the Association for Educational Communications and Technology (AECT). The AECT is the premier professional association which focuses on the use of technology as related to education. "The mission of the Association for Educational Communications and Technology is to provide international leadership by promoting scholarship and best practices in the creation, use, and management of technologies for effective teaching and learning in a wide range of settings" (AECT 2004, Mission section, ¶ 1). The AECT, like the AASL, has a long-standing partnership with NCATE for the purpose of establishing standards to guide professional program accreditation. To that end, AECT has developed a battery of standards which put forth the core educational goals for the field of educational technology. Graduate programs in educational technology must meet these standards in order to be accredited.

The domains of the field of educational technology prescribed by the standards include: design, development, utilization, management, and evaluation. Smith and Ragan (1993) define instructional design as a "...systematic process of translating principles of learning and instruction into plans for instructional materials and activities" (p. 2).

Anglin (1995) more fully describes instructional systems design as a system that includes the ability to analyze tasks, learners and content, to develop learning objectives and assessment methods towards those objectives, to select appropriate media and develop materials that will represent the ideas encompassed in the learning process, and to evaluate in formative (i.e. in process mode) as well as in a summative mode. The areas within the domain of "design," that would be complementary to LIS educational programs, include an understanding of educational systems design, instructional strategies, and learner characteristics. In the "development" domain the LIS student would benefit from knowledge of integrated technologies. From the third domain, the LIS curriculum would explore concepts related to media utilization. LIS management courses would be extended to cover project management and delivery system management. And finally, from the domain of evaluation, LIS courses would have the pre-service professional learn about problem analysis, criterion-referenced measurement, and formative and summative evaluation techniques.

Knowing and Seeing Purposeful Change

The ongoing trends in learning and instructional technologies affect the instructors, the teaching librarians, the self-taught learners, the designers and technologists. They also affect the educational programs and curricula that prepare all of these individuals to take part in today's shifting learning environments. The shift toward user-centered learning is implied by Hill and Hannafin (2001) as they describe how, "Individuals must recognize and clarify learning needs, plan a strategy to address those needs, locate and access resources, evaluate their veracity and utility, modify approaches based upon an assessment of learning progress, and otherwise manage their teaching or learning." (Headnote section, ¶ 7). Harada (2003) points out that "in this constructivistic approach, there is a fundamental shift from instruction to construction and delivery. Learning is not simply assimilating knowledge transmitted by textbooks and instructors but personally building and communicating knowledge" (p. 42).

An exploration of various examples of how all are adjusting in this environment can be most enlightening if not inspiring. At the City University of New York at Queens College, librarians have employed technology to extend and strengthen evaluation techniques and feedback related to efforts in information literacy. An analysis of the practice quizzes that follow the CUNY "Information Competency Tutorials" reveals how constructivistic learning and feedback techniques are being applied in the field. See this innovative library-generated content at http://qcpages.qc.cuny.edu/Library/olstutorial/index.html.

The "Someday Soon" online learning website for budding entrepreneurs, developed by the Brooklyn Public Library, is a masterful feat of instructional web design, instructional technology, curricular cooperation and development, and library content

and resource building and integration. It includes student focused self-paced learning tools. The project was managed by a tech-savvy librarian with a pedagogical background in educational technology and is delivered to Brooklyn area school students via cooperative library/school training workshops. See this extraordinary library-generated content for teens at http://somedaysoon.brooklynpubliclibrary.org.

Turning toward LIS curricula, Syracuse University's School of Information Studies Certificate of Advanced Study in School Media offers a refreshing integrative approach for SLMS. (Small, et al. 2003). Their course, IST 611 - Information Technologies in Educational Organizations, brings together school library media students and School of Education educational technologists in a collaborative learning environment. The online course catalog description reads; "Information and communications technologies, ethical issues, knowledge management tools, collaborative learning technologies, education databases, etc. On-site project field work constitutes a major portion of course requirements." (Syracuse University School of Information Studies, 2005, Courses section, ¶ IST 612). Both sets of students are learning the same information in order to advance collaborative instructional and curriculum planning. As all learning environments evolve into collaborative, student-centered, technology-driven learning platforms, librarians in all practice areas could benefit from learning the pedagogy that SLMS and educational technologists are learning.

Conclusion

While information and communication technologies change the way library services are created and delivered, library professionals need to be prepared to cooperate more dynamically with other teaching staff while being able to harness ICT. The pedagogies that infuse graduate curricula in educational technology are ripe with methods and theories which should be adopted by the accredited LIS professional certification programs. Further and more in-depth cross-disciplinary examination of these two fields' graduate educational programs should yield an abundance of opportunities to improve pre-professional training of library and information professionals. The services and products generated from more fully educated library professionals will surely benefit the learning members of today's information society.

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