Certificate in Digital Information Management: A Cross-Disciplinary Functional Approach

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Abstract

The University of Arizona School of Information Resources and Library Science, the Arizona State Library, Archives and Public Records, and the University of Arizona Office of Continuing Education are collaborating to develop and administer a new post-baccalaureate certificate program (DigIn) that introduces students to the theoretical knowledge, conceptual framework and practical skills required to create, maintain and curate collections of digital information. DigIn is a graduate college-approved study program consisting of six newly developed graduate-level courses delivered virtually. The certificate serves as an entry point for candidates with degrees in other disciplines who are considering pursuing the master's degree in information resources and library science and who also have an interest in technology and digital collections. For those already holding or concurrently pursuing a master's or doctorate degree in library and information science, it serves as a post-master's certificate of specialty or an area of concentration. Finally, the certificate provides current practitioners a practical way to update and enhance their skills for existing employment or in contemplation of new opportunities. Curriculum development is grounded in a functional approach designed to integrate the practices of librarians, archivists, records managers and technologists within a framework of disciplinary knowledge and the work of interrelated communities of practice. The coursework balances subject knowledge and practical hands-on skills within a digital collection context and assures that students acquire an understanding of the professions while demonstrating comfort and proficiency with technology and the ability to continue to develop their technical skills upon completion of the program.

Introduction

In the fall of 2005, the University of Arizona School of Information Resources and Library Science (SIRLS) in partnership with the Arizona State Library, Archives and Public Records and UA's Office of Continuing Education and Outreach began to develop a new post-baccalaureate certificate program in Digital Information Management. The program seeks to address the need for the rapid scaling of education and training for professionals in order to handle the management of digital objects across multiple settings. Broad input from subject matter experts and practitioner librarians, archivists, records managers and technologists inform a functional approach to curriculum development designed to integrate disciplinary knowledge and the practical work of interrelated communities of practice. In this paper, we will address the justification for the certificate program, the steps we have taken to assure that the curriculum addresses a common core of disciplinary understanding and technology skills appropriate to relevant communities of practice, our method of curriculum development and the current status of the program as we begin delivery to the first cohorts of students.

Justification of Need

SIRLS and its partners first developed a case statement that was used to build internal support and serve as the summary justification for proposals for funding, primarily from the Institute for Museum and Library Services (IMLS).

Case statement

"The explosion of born-digital documents along with the accelerating rate of digitization of records of all kinds of information create new opportunities for professionals well grounded in traditional library and archival theory and current practice who also possess the technical skills needed to create, maintain and manage collections of digital information. For example, Myburgh (2003)[1] analyzes current job postings and demonstrates that today's Library and Information Science (LIS) graduates face increasing demands for information and communications technology skills in the job market, and in some cases, competition from computer science and MIS professionals for technical positions. Richard Pearce-Moses, past president of the Society of American Archivists, raised the parallel issue of technical skills for archivists working with digital records in his talk "Winds of Change."[2]

"As the number of digital information collections of all kinds grows nearly exponentially, demand for knowledgeable information specialists outpaces the supply of qualified candidates. Information stored in printed materials – including books, journals, newspapers, mail, mass market periodicals and office documents – is relatively steady, with growth of 7% reported for the period 1999 to 2002. In contrast, the amount of information stored on the web alone during the same period tripled.[3] The majority of government and business records are now created in digital formats and may never be printed. New categories of documents, including emails, instant messaging, and digitally encoded video and sound recordings, challenge archivists and record specialists. Digital information is not a future the professions should be planning; it is the current reality that the professions must actively address.

"Yet even as the means by which information professionals accomplish their work change, the traditional disciplinary knowledge of the librarian, archivist and records specialist remains critical to effective discharge of their professional duties. What these specialists do – selection, acquisition, classification and description, reference, outreach, and preservation – does not change; the theoretical knowledge of the professions remains applicable to the digital environment. There is a significant risk, however, that without the technical competencies to curate digital collections and process digital information, professionals from other disciplines

may wrest effective jurisdiction over the domain. As Pearce-Moses observed, “Archivists and records professionals – as a whole, and not just digital records specialists – must respond by becoming as comfortable working with digital materials as they are with paper.”[4]

“Sutton (1999)[5] posits the dilemma as follows: “How do we structure LIS educational institutions and the LIS profession to play a continuous role in re-educating the professionals whose knowledge and skills have been *intentionally* rendered obsolete both from within and without the profession?” In effect, Sutton cautions that if librarians and archivists do not stake a clear disciplinary claim, others will. He argues for balance in LIS education from both the community of scholars and from the community of practice.

“The predicament for schools of library and information science and the records management and archival disciplines, therefore, lies in how to assure that programs and curriculum integrate the theoretical underpinnings of the disciplines within the contextual framework and practical competencies needed to perform effectively in a rapidly evolving information marketplace. In considering how technology is integrated in today’s LIS curricula, Markey (2004) argues in a recent comprehensive survey of LIS curriculum that information technology is “the driving force behind the development and enhancement of LIS programs.” [6] Nevertheless, the coursework added is generally in the form of electives and not delivered with the same emphasis or integration as traditional LIS offerings such as organization of information, reference, management and other foundational courses.

“Markey recommends that programs should address unclaimed or disputed areas such as information organization, authoritative information, content creation, and preservation, and that LIS schools should consider how the future will affect the field and the school and develop both faculty and curriculum accordingly.[7]

“Van House and Sutton (1996) are more provocative in their assessment, warning that “survival of LIS education does not necessarily mean the survival of current programs, and certainly does not mean their survival in their current forms. It means survival of the knowledge base, approaches, values, practices, and tools which must be applied to new problem areas.” [8]

“Increasingly, graduate schools are turning to post-baccalaureate and post-master’s certificate programs as a means to bridge the skills gap within the context of a rigorous academic program. Welch and Syverson (1997)[9] and Patterson (1999)[10] list several reasons graduate schools are developing certificate programs including: providing a more flexible response to an emerging need for specialized training; providing an easier path to graduate education, especially for persons who have been out of school for some time; providing a recruitment path for students who pursue degree programs following acquisition of a certificate; providing an opportunity for a discipline or interdisciplinary group to take their first steps in offering graduate level programming; providing an opportunity for students to develop an expertise which may help in advancing their careers, or in changing careers; and providing a new revenue stream for the university.

“Properly developed and administered, a graduate certificate program can address the challenge of providing both an academic and practical education for librarians, archivists, and records specialists seeking to acquire a firm understanding of digital information collections and data curation. The program should be developed in consultation both with academic scholars and practitioners, administered primarily by a qualified professor of practice, require an undergraduate degree, and be related to a graduate degree program. The certificate may serve as a stand-alone post-graduate certificate, a concentration within an academic master’s

program or PhD minor, or it may serve as a post-master's add-on offering evidence of additional specialization and expertise. In contrast merely to adding electives to an existing master's program, the certificate, by its nature, incorporates a diversity of classes all designed to inform an area of specialization while providing the disciplinary knowledge and conceptual framework that characterize the profession."

Funding

IMLS awarded three years of funding starting July, 2007, to SIRLS under the Capacity Building priority of the 2006 Laura Bush 21st Century Librarian program. IMLS funding is being used to build capacity through development of new courses for delivery within the certificate program and to recruit and retain a professor of practice to manage the certificate curriculum and delivery during the grant period. Funding also provides for a limited number of student scholarships and for graduate assistants to assist with research, course development and teaching assistance. SIRLS and its partners' matching contributions include graduate assistants, administrative support, course development, course delivery on an integrated e-learning platform, promotion, recruitment and retention of students, internships, and funds for adjunct instructors to develop and deliver coursework.

Concept

The Certificate in Digital Information Management (nicknamed DigIn) introduces students to the theoretical knowledge, conceptual framework and practical skills required to create, maintain and curate collections of digital information. The functionally organized curriculum provides a foundation in digital records, digital archives, digital libraries, and other kinds of digital collections. Coursework integrates the disciplinary knowledge of the communities of practice and the underlying technological foundations within a digital collection context. The functional approach assures that students acquire a core understanding of the professions while demonstrating comfort and proficiency with technology and the ability to continue to develop their technical skills upon completion of the program.

Graduates of the DigIn program must be able to apply a variety of organizational approaches and intellectual technologies to digital information. Traditional divisions, or silos, defining the professions in libraries, archives and records are changing and in some cases breaking down as technology transforms the way people work. In the digital world, managers of digital information will be most flexible if they can match technologies and approaches to the situation. Cross-disciplinary understanding of both knowledge and skills of librarians, archivists, records managers and technologists becomes increasingly important for professionals working with digital assets.

Identifying a common or core understanding of technology knowledge and skills across multiple disciplines is challenging. Within specific communities of practice, efforts are ongoing to enumerate skill-sets and the theoretical knowledge appropriate to specific jobs and tasks. In order to assure that new DigIn curriculum addresses a cross-section of specialized disciplinary needs, development is being conducted with advice and recommendations from a national panel of recognized experts in the fields of digital libraries, archives, records management, technology and other collections.

A local working committee is charged with integrating the national panel's input and the work of experts providing course development and delivery according to the requirements of SIRLS and the University of Arizona Graduate College. SIRLS' approach to DigIn curriculum development is functional. Our team relies on the panel of advisors to help identify disciplinary functions, and where disciplines differ in approach, to articulate the differences..

Based on the initial research and subsequent feedback from advisors, SIRLS elected to develop an entirely new curriculum rather than group existing master's level courses to create a program of specialization. While existing courses in digital libraries, advanced archives and other topics cover much of the needed material, few traditional graduate level LIS courses stress hands-on learning and technology applications to the extent envisioned for the DigIn certificate.

DigIn is now comprised of six full-credit graduate courses, all required and delivered online. New courses under development especially for the certificate program include Introduction to Applied Technology, Introduction to Digital Collections, Digital Preservation, Managing the Digital Information Environment, Advanced Digital Collections and a capstone course that includes practical study and completion of a digital portfolio. All courses will require extensive hands-on learning of technology and applications.

Course content will be based on a pedagogical model that incorporates disciplinary theory, a conceptual framework, and practical application skills.

Theory	Knowledge of the disciplines, history of the profession, core comprehension. "How can one appraise records for acquisition?"	Readings, textbooks
Conceptual Framework	Strategic knowledge of the disciplines. "Are these records of sufficient value to acquire?"	Lectures, discussion
Practical Application Skills	The discipline in practice, tools and methods. "What techniques will allow me to acquire these records for the collection?"	Projects, homework, internships, digital portfolios, authentic learning experiences

Hands-on projects will be emphasized, and students will be required to acquire and maintain a variety of technologies in the creation of portfolios and authentic work projects such as working web servers, databases and operating system configuration and maintenance.

SIRLS and its advisory teams first initiated a process under the facilitation of the UA University Teaching Center of developing a coherent concept map of learners, context, learner outcomes, goals and objectives and a pedagogical approach.

Based on the initial concept mapping process, participants agreed that DigIn will reach a diverse pool of knowledge and skill seekers. Traditional and non-traditional students will be attracted to the program based, in part, on their current education or career path goals and a desire to acquire the additional skills needed to achieve those goals.

DigIn students may be recent graduates of a computer science program or arts and humanities-focused programs seeking to diversify their undergraduate degree with theory and practical skills needed to excel in the management of digital information in a variety of environments. The theory and skills offered by the certificate program will also appeal to lifelong learners interested in the world of digital information, culture, and technology. These individuals, for whom technology is a transparent and organic part of their everyday life, will be drawn to DigIn as a way to formally understand the world in which they inhabit and apply new skills in their career.

The DigIn program will be an attractive opportunity for individuals seeking an added advantage when making mid-career advancements (current librarians and information specialists) or mid-career changes to information management fields from other lines of work.

DigIn also promises to draw a substantial number of recent Master of Library Science graduates seeking to bolster their graduate studies with additional work in digital information management.

An initial set of program outcomes was developed. First and foremost, DigIn will produce an informed learner. In general terms, this means the successful graduate will be prepared for leadership roles in digital information management and prepared for management of the information environment in libraries, archives and other communities of practice. A key marker of the success is evidence of the acquisition of the "soft skills" that are essential to leaders and managers in any field of study.

The effective graduate will model success in several ways. The student will:

- acquire and demonstrate the skills and knowledge necessary to continue as lifelong learner, not only mastering the issues and technologies of today but also the issues and technologies not yet apparent or developed.

- model information literacy throughout the course of study and in professional positions that follow.

- possess the fundamental knowledge of the core theoretical background underlying digital information studies.

- acquire or further develop and abide by an understanding of the mission of the librarian or other information professional and the codes of ethics of the professions including respect for privacy, intellectual property and intellectual freedom.

- acquire or further develop the ability to understand the information needs of the community being served.

- model successful communication skills across a broad range of technical and non-technical perspectives among communities of information consumers

- possess the confidence needed to excel across a broad range of professional dimensions including teaching and learning, leading and administering, and managing digital information.

Program

A comprehensive proposal for the DigIn certificate was submitted by SIRLS for approval of the University of Arizona graduate college in February of 2006. Based on information provided by the graduate college at the time, approval was anticipated within four to six months. In the summer of 2006, the process was lengthened for procedural reasons, however the certificate application was fully approved by the faculty senate in December of 2006, removing the last barrier to recruitment and detailed course development.

While SIRLS could have proceeded earlier with what is commonly referred to as a departmental certificate without the graduate college imprimatur, credibility of the program is strengthened by recognition by the graduate college as a formal course of study at the post-baccalaureate level that will be recognized on student transcripts. Graduate college certification requires a justification and approval process that spells out learning objectives and outcomes as well as the relationship of the certificate to other graduate programs.

SIRLS and its partners made a number of decisions that are designed to institutionalize DigIn as an ongoing program complementing SIRLS' master's and doctorate programs and that meet UA and professional standards for course content and delivery.

First, SIRLS is electing to proceed on an authorship model of course development, meaning that SIRLS retains the ability to deliver courses initially developed using expert practitioners and theoreticians. This assures not only that students will be exposed to practitioners with expertise in all aspects of digital information management but that the courses themselves will, over time, be informed by a growing pool of experts and practitioners. It also helps assure that each cohort of students will receive a consistent and standardized course of study.

Second, SIRLS has worked with course development specialists to create a template for course delivery that is flexible and that also incorporates appropriate pedagogical design for online delivery. These include formalizing module components that take the best advantage of the virtual learning environment to accommodate students with diverse learning styles.

Finally, SIRLS is working with its current full-time faculty and curriculum committees to assure that all DigIn courses meet the requirements of a rigorous master's level course. This includes articulating course-load expectations and harmonizing other aspects of graduate level study including advising, admissions, co-enrollment, and limited provisions for dual credit. Currently admissions requirements for the certificate mirror those of the UA graduate college and SIRLS' master's program with the exception that certificate students are not required to submit scores for the graduate record exam (GRE). Students who go on to apply for the master's program will be required to meet the GRE requirement.

Harmonizing, however, does not mean that the DigIn certificate is intended or should be viewed as a substitute for the MLS or other degrees required by employers or accreditation bodies. Certificate programs in general are sometimes perceived as hostile to traditional professional programs that require a master's degree or beyond. SIRLS, however, does not expect the certificate program to cannibalize its master's program. Based on surveys of departments that have implemented certificate programs across a wide range of disciplines and studies, 90% of respondents in one study indicate this has not happened and in fact, certificate programs often attract students who would not otherwise be in graduate programs.[11] These surveys also show that certificate programs frequently serve as a path towards a full master's degree.

While the ALA-accredited Master's degree in library and information science will remain the gold standard for library professionals for the foreseeable future, the increasing specialization and interdisciplinary requirements of open jobs in libraries, archives and records collections foster a growing interest in alternatives that serve current staffing demands and projected candidate shortages. Traditionally structured graduate programs do not always provide a manageable and affordable environment for today's diverse range of graduate students. Welch et al (1997)describe them as often older with career and family responsibilities and the need to attend on a part-time basis. Further, many currently in the workforce do not always desire a full degree program. These individuals often have an existing graduate degree and need to update knowledge and skills or pursue additional concentrations in new areas of study.

Digital Information Certificate enrollment is anticipated to range from 15 to 25 new students annually who are pursuing this specialization. As currently designed, the certificate can be completed in as little as 15 months. Students begin with Introduction to Applied Technology each summer. Two certificate courses, Introduction to Digital Collections and Managing the Digital Information Environment are offered each fall. Advanced Digital Collections and

Preservation are offered each spring. The capstone, which includes a formally supervised practicum, is also offered each summer. Students who wish to limit their studies to one course at a time complete the program in 27 months.

Current Status

Development is nearly complete for the first two courses, Introduction to Applied Technology, and Introduction to Digital Collections. Working descriptions of course content and topical coverage have been drafted for the remaining courses to be developed.

An initial cohort of approximately 15 students has formally applied, under very short notice, and course delivery will begin in May, 2007. The initial cohort of students meets SIRLS recruiting objectives and admissions requirements including representation from women and ethnically diverse students who are especially under-represented in technology-related professions.

The pool of candidates for the professor of practice position has been narrowed to a final list of candidates and a selection is anticipated in the very near term. The professor of practice will assume the responsibility for ongoing program administration, recruitment of additional adjunct professor positions and student recruitment upon appointment.

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