

Loyola Marymount University

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Digital Libraries Education Program

Kristine R. Brancolini, *Loyola Marymount University*



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1. Project Title

Building an Effective Digital Library Curriculum through Library School and Academic Library Partnerships

2. Abstract

Indiana University (IU) and the University of Illinois at Urbana-Champaign (UIUC) propose the creation of the first research-based, comprehensive master's-level and post-MLS degrees to educate librarians for work in digital library programs in libraries and archives. The project builds upon the experience and expertise of two renowned schools of library and information science—the School of Library and Information Science¹ (SLIS) at IU and the Graduate School of Library and Information Science² (GSLIS) at UIUC—and the highly respected digital library programs developed in the academic libraries of their respective institutions³. We envision a program grounded in the needs of the discipline that couples the theoretical orientation of graduate library education with the “real world” of work in academic digital libraries. The collaborative feature of this proposal also will allow us to maximize the complementary strengths of both schools, for instance through the cross-listing of selected existing and new, to-be-developed courses in digital librarianship that will make each partner's offerings more comprehensive. This project will help guide other graduate library schools across the country that are struggling with 1) attracting the best and the brightest to the library profession and 2) educating students and practicing librarians who are excited about employment opportunities in digital library programs.

Under the proposed program, new, comprehensive digital library concentrations will be offered to master's degree students in SLIS and GSLIS and post-MLS students within the Specialist in Library and Information Science (SpLIS) program at IU and the Certificate of Advanced Study (CAS) program at UIUC. New internships in digital library projects, designed to complement these new concentrations, will be added in the libraries at both institutions. Post-MLS enrollees will be required to complete an internship. Our pilot project will feature paid fellowships for a limited number of students, at both MLS and post-MLS levels, who will receive tuition and fee remission, a stipend, and a paid internship for one semester, two semesters, or a summer session. Graduates of both programs will be eligible for one of four semester-long, full-time digital library residencies.

IU and UIUC present a unique environment in which to create a model program for education and training in digital librarianship: two excellent, ALA-accredited schools of library and information science, each with a history of partnership with their respective university libraries; and two nationally recognized digital library programs. As members of the Committee on Institutional Cooperation (CIC) we have a history of collaboration and partnership in the area of digital library education and project development. For example, IU offers special expertise in the creation of digital music libraries (Variations and Variations2).⁴ UIUC has been a leader in the development of Open Archives Initiative metadata harvesting services and offers special expertise in the development of cultural heritage and science and engineering digital libraries. We will draw upon a wealth of scholarship and digital library practice to create team-taught courses that will be offered to students on both campuses. The CIC already has in place a program that allows students at one institution to take distance education courses on another campus for credit.⁵

Our proposal addresses two of the priorities for Librarians for the 21st Century: To develop or enhance curricula within graduate schools of library and information science, in the critical area of digital librarianship (Priority #5); and to educate the next generation of librarians by increasing the number of students enrolled in nationally accredited graduate library programs preparing for careers of service in libraries (Priority #1).

¹ <http://www.slis.indiana.edu/>

² <http://alexia.lis.uiuc.edu/>

³ <http://www.dlib.indiana.edu/>; <http://dli.grainger.uiuc.edu/>

⁴ Variations is a working music digital library with more than 8,000 CD-quality sound recordings streamed to students in the School of Music: <http://www.dlib.indiana.edu/variations/>. Variations2 is an NSF-funded research project designed to extend the scope of Variations to include scores and learning activities incorporating digital sound recordings:

<http://variations2.indiana.edu/>.

⁵ CIC CourseShare: www.cic.uiuc.edu/programs/CICCourseShare/index.shtml

3. Narrative

Introduction

What are ‘digital libraries?’ More importantly, why do we posit the need for a master’s degree concentration and a post-MLS specialization to address digital librarianship? Because we believe that defining digital librarianship is a complex area and the knowledge and skills needed to perform digital library jobs are difficult to acquire in the graduate library school curriculum. In 1998 Donald J. Waters, who was at the time director of the Digital Library Federation, noted:

The meaning of the term “digital library” is less transparent than one might expect. The words conjure up images of cutting-edge computer and information science research. They are invoked to describe what some assert to be radically new kinds of practices for the management and use of information. And they are used to replace earlier references to “electronic” and “virtual” libraries.⁶

In order to work together to build digital libraries and federate access to them, the members of the Digital Library Federation defined ‘digital libraries’ as follows:

Digital libraries are organizations that provide the resources, including the specialized staff, to select, structure, offer intellectual access to, interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community or set of communities.⁷

Years later, this is still one of the most popular and frequently-cited definitions of “digital libraries.” It encompasses the aspects of digital library education, collection development and services that will guide our work on this project.

Those of us who manage digital libraries know that hiring the right people can be the most critical factor in a successful digital library program, yet the pool of qualified applicants for every position is extremely small. Whenever we gather at events such as the *Digital Library Federation Forum*, *Web-Wise*, and the *Joint Conference on Digital Libraries* the discussion usually turns immediately to issues related to recruitment and retention. Even those of us fortunate enough to work in academic libraries with allied schools of library and information science are keenly aware of the difficulties in finding recent graduates with broad knowledge of and familiarity with digital library systems and services. More often we see candidates who have had one or two digital library courses in isolation during their MLS or post-MLS curriculum—desirable coursework, but insufficient for an overarching understanding of the domain. Any true experience in real-world digital library settings is even less common. We lament as well the lack of diversity in the background of library school graduates, particularly the lack of library school graduates with technology-related undergraduate majors and/or pre-library school experience in computer science and related disciplines.

To address this problem, we propose to take a systematic approach to improve the way we educate and train students for careers as digital library professionals, beginning with a thorough analysis of the skill and knowledge requirements most essential to better support digital library programs. We will also include as part of our proposed program the establishment of internships and residencies that will not only extend classroom learning for students but also help attract new students with stronger and more diverse prior backgrounds in technology. Furthermore, we propose doing this in a collaborative environment that exploits—in the most positive sense of that word—the strengths of two highly respected graduate schools of library and information

⁶ Donald J. Waters, “What Are Digital Libraries?” *CLIR Issues*, Number 4, July/August 1998. <http://www.clir.org/pubs/issues/issues04.html#dlf>.

⁷ Digital Library Federation. “A working definition of digital library.” <http://www.diglib.org/about/dldefinition.htm>.

science and the broad-based experience and expertise of two well-established and experienced digital library programs, within the IU and UIUC libraries. Both of these universities offer a master's degree in library and information science as well as a post-MLS program: the Specialist in Library and Information Science (SpLIS) at IU and the Certificate of Advanced Study (CAS) at UIUC. Students at UIUC may complete either of these degrees via distance education.

Achieving a better understanding of the skills and knowledge needed to support emerging digital library projects is critical to the success of our proposed program. In "Skills for the New Millennium," published in the January 1, 1999, issue of *Library Journal*, Roy Tennant defines the knowledge and skills needed by the librarians who create and manage digital library collections and services. These digital librarians, he writes, must know about imaging technologies, optical character recognition, markup languages (HTML for Web pages and SGML/XML for text), cataloging and metadata, indexing and database technologies, user interface design, programming, Web technologies, and project management.⁸ Is this list valid? It is complete? What is the best way to organize these topics into courses? How does professional education integrate theoretical background in these areas with practical skill? What is the relationship between classroom learning and part-time work experience? What do librarians need to know about technology to work effectively with IT professionals? These are all questions we plan to answer in the course of our project.

3.1. Impact

3.1.1. Scope & Limitations of Digital Librarianship Education

While many library schools offer courses designed to prepare professionals for work in a digital library program, few, if any, do so in a systematic and comprehensive manner. In 2001 Saracevic and Dalbello examined the Web sites of 56 ALA-accredited library schools to analyze the course offerings in the area of "digital libraries," broadly defined.⁹ They found that 47 (89 percent) include digital library "in some form or another or to some degree in their curriculum." However, only 15 (32 percent) have independent digital library courses; nearly one-half (49 percent) offer no separate digital library courses, but rely exclusively on the integration of this content into other courses. One difficulty in determining the availability of digital library coursework in library schools is the failure to differentiate between courses that focus on *using* digital library content and courses that focus on *creating, maintaining, delivering, and preserving* digital content. We believe that many of the courses that integrate "digital libraries" into other courses emphasize *using* digital content. Even if some current courses are designed to teach students about creating, maintaining, delivering, and preserving digital content, do they include the content that is relevant for digital library education and are the teaching methods and learning activities effective? What are the limits to what can be accomplished in the classroom? When is it more appropriate to cover particular knowledge and skills through practical experience – or supplement classroom instruction with this experience? The courses are developed by library school faculty who may or may not have experience in a working digital library. It would be difficult for library school faculty to incorporate all of the rapidly-evolving digital library technologies in their courses without close working relationships with working digital library professionals.

A better and more systematic understanding of practical digital librarianship and its relation to digital librarianship education is needed. A major component of our project in Year 1 will be to gather and analyze data regarding the knowledge and skills needed to perform a variety of digital library jobs. We will work with the Library Research Center at UIUC,¹⁰ which is affiliated with GSLIS, to collect and analyze data and to

⁸ Roy Tennant, "Skills for the new millennium," *Library Journal Digital*, January 1, 1999. URL: libraryjournal.reviewsnews.com/index.asp?layout=articleArchive&articleid=CA156501

⁹ Tefko Saracevic and Marija Dalbello, "A Survey of Digital Library Education," in the *Proceedings of the American Society for Information Science and Technology*, Volume 38, 2001, pp. 209-223.

<http://www.scils.rutgers.edu/~tefko/ProcASIST2001.doc>

¹⁰ <http://alexia.lis.uiuc.edu/gslis/research/lrc.html>

advise the project team working on curriculum and course development. The results of this in-depth review of current practice and the analysis of critical needs will inform not only this project but also library and information science programs nationwide. The results will have the potential for major impact on the way the community approaches digital librarianship education.

3.1.2. Curriculum and Course Development

Based upon the analysis described above, we will develop a MLS digital library concentration and post-MLS specialization, comprised of a series of core digital librarianship courses, required of all students who complete the digital library master's degree or the post-MLS specialization, and a range of complementing electives in digital librarianship (incorporating existing elective courses as appropriate). These courses would also be available to students who are not formally pursuing the concentration or the specialization. Although these courses will be determined during the phase of the project described above, we can already anticipate courses such as an introduction to digital library concepts and technologies, digitization, metadata, database and retrieval technologies, interface design and usability, and digital library design and management.

The content of these courses and the teaching methods employed will be measured against the criteria established during the curriculum research and design phase of the project. This will be an iterative process, with the proposed outcome being a validated core of courses that, taken together, ensure that students are prepared for a variety of jobs within the broad area of digital libraries. We plan to work with Instructional Support Services/Bloomington Evaluation and Testing Services (BEST)¹¹ and UIUC's Center for Teaching Excellence¹² to conduct the assessment of student learning and course evaluations. Again this process will not only ensure the quality of the new and revised courses, concentrations, and specializations implemented at IU and UIUC, but will also be of interest and utility to the library science education community more broadly as they grapple with the same need to keep curricula relevant.

3.1.3. Recruitment of New Digital Librarians

Given the prominence, leadership influence, and size of the library school programs at IU and UIUC, successful completion of this proposed program, leading to increased institutional capacity to educate students in digital librarianship, will immediately increase the numbers, readiness, and potentially the quality of graduates prepared to pursue careers in digital librarianship. Recruitment efforts for this program will build upon positive experiences at both IU and UIUC. IU has found three strategies to be most effective in recruiting students: targeted mailings, advertising, and personal networking. Strategies with proven effectiveness will be evaluated for the applicability to digital library recruitment. For example, we may find that although targeting library human resource departments is very effective for general SLIS recruitment, we experience more success in targeting university information technology organizations. Assessment of recruitment strategies will be based upon the specific goals and objectives. Therefore, we plan to create a brochure describing our program, with examples of current digital library projects, to give prospective students a sense of the close connection between classroom instruction and practical work experience. The project Web site, which will include information for prospective students, will also serve as a recruitment tool. We view the partnership among the schools and the working digital library programs to be a crucial factor in recruiting students to the program. Work performed under this grant will investigate whether a focused digital library curriculum will attract students with non-traditional subject backgrounds, such as computer science. One pool of potential recruits at UIUC is students enrolled in the Information Technology Studies minor, several of whom are computer science majors.¹³

Our preliminary research suggests that all students who plan careers in digital library programs need practical out-of-class experiences to supplement and enhance classroom learning (See *Related Activities*, Attachment 1).

¹¹ <http://www.indiana.edu/~best/>

¹² <http://www.cte.uiuc.edu>

¹³ <http://alexia.lis.uiuc.edu/gslis/degrees/undergrad.html>

We have also learned that offering specific paid internships and fellowships, publicized through a brochure, is one of our most effective recruitment techniques. Eventually, we plan to offer each student enrolled in one of the digital library degree programs a one-semester internship before completion of the program. In order to build this capacity, we propose beginning with five paid graduate assistants at each university, who will be guaranteed a credit-bearing internship in one of a variety of digital library projects. In addition to these fellowships, which guarantee an internship, we will offer internships, paid and unpaid, to selected other students. Students from IU may find a more appropriate internship at UIUC and vice versa. And, indeed, our institutions already have experience partnering in this way. UIUC, for example, is one of the satellite sites for the Bloomington-based Variations2 Project. Last summer students enrolled in the music librarianship program at UIUC completed internships in Bloomington.

A major strength of our proposal lies in the diversity of digital library activity at the two institutions. We already have many different kinds of projects and activities that would meet the needs of students for experience in the creation of digital objects, databases, metadata, user interfaces, and more. Part of the project will be to evaluate the feasibility of offering all students enrolled in the program an internship and the resources required to do so. We will offer internships at both IU and UIUC in a wide variety of digital library settings—libraries, archives, museums, research institutes, and more. Residencies as well are attractive recruiting inducements and also have the potential to help libraries in attracting the best graduates. We will, therefore, further enhance classroom instruction by offering six-month, full-time residencies to selected post-master's candidates who complete our program.

3.2. Diversity

Both SLIS and GSLIS have established longstanding practices to recruit and retain a multicultural, multiethnic, and multilingual student body. Enrollment data show progress. In the past three years, SLIS has focused strategic energies on recruiting and retaining diverse students, with impressive results. The SLIS 2003 ALISE report, Table II-4 "Enrollment by Gender and Ethnic Origin," reported 16% of students who did not self-identify as white, which includes international students and students who did not select a racial category. Ten students indicated black heritage and 12 students indicated Hispanic heritage. As recently as five years ago, only three students indicated Hispanic heritage (1999 ALISE report).

We will examine the strategies used to increase minority enrollments at IU and UIUC in order to determine how they might be adapted to the recruitment of students for the digital library track and post-MLS specialization. As described in the section on recruitment (3.1.4), we believe that targeted mailings about the project, sent to a wide array of colleges and universities—including traditionally black institutions—will produce the same results in minority recruitment for our project. At UIUC, the coordinator of the fellowship interns and residents will be an African-American librarian who is a recent GSLIS graduate and has worked as a graduate assistant on their National Science Digital Library grant. He will also assist in recruiting minority students into the program.

3.3 Design

3.3.1. Audience

Our project has two audiences: 1) library school curriculum planners, administrators, and faculty who create degree programs and teach courses preparing students to work in digital library programs; and 2) university, special, and public library administrators and system managers who support robust digital library development and implementation programs. We hope to encourage library schools to partner with extant digital library programs within or outside their own institution. There is a major difference between digital library work and other types of practical work in libraries. All library schools exist within a setting where they can offer students a wide variety of internship possibilities – academic, public, school, and special libraries. However, many library schools do not have an experienced digital library program with which to partner and to be the

site of practical experience. We plan to demonstrate to our audience how internships at other institutions could fill this gap. Even when a library school offers a wide range of internships within the institution, students often elect to locate internships at another institution or in special library in another city.¹⁴ This may become a required component of library programs that offer a concentration or a specialization in digital libraries.

3.3.2. Needs Assessment

This project emerged from our experience teaching digital library courses and managing digital library programs. Evidence suggests that students desire formal education preparing them for work in digital library programs. In a survey of Library and Information Science interest conducted by SLIS in fall 2003, digital libraries were ranked second among MIS/MLS dual master's students. When asked to rate the relevance of digital libraries and digital archives to library education, 79 percent rated digital libraries as highly relevant or relevant and 50 percent rated digital archives as highly relevant or relevant. At the same time, digital library programs often experience difficulty recruiting well-trained librarians: it is not uncommon for searches to require more than one posting in order to attract a large enough pool of qualified applicants. A search of the literature revealed that there is a lack of systematic education for digital library professionals.

One of the most comprehensive surveys of digital library courses in universities was conducted by Amanda Spink and Colleen Cool and published in the May 1999 issue of *D-Lib Magazine*. They sent an email survey to LIS and computer science faculty who had attended the June 1998 ACM Digital Libraries Conference in Pittsburgh, and then surveyed Web sites maintained by schools of library and information science. They collected data on 20 institutions worldwide that offer at least one digital library course. They reached the following conclusion:

“[T]here is little systematic support for developing DL courses and curricula, and no coordinated effort in library and information science (LIS) or computer science to provide DL education. At present, we do not know much about good digital library education. We do not know what knowledge is required to produce information or computer professionals to work as digital librarians, digital developers, or in other job categories, or even what the job designations or requirements will be in the future.”¹⁵

In 2001 Saracevic and Dalbello, faculty at the Rutgers University School of Information and Library Science, investigated the same issues. They conducted a survey in two parts, a Web survey of curriculum and course information as posted on library school sites and an email survey posted on several listservs. The authors found that digital library education is split in many institutions between two areas, library and information science on the one hand and computer science on the other. They note that this reflects the dichotomy between digital library development and operations in the library and digital library research in academic schools and departments. “While they are in the same planetary system,” they wrote of the two activities, “one is from Venus and the other from Mars.” In this project, we seek to bring together research and practice by closely integrating the theoretical study of digital library development in two schools of library and information science and two experienced and advanced digital library programs in the same institutions.

In order to validate our preliminary ideas for this project and to obtain feedback from students and faculty working in the area of digital libraries, we organized two activities. Kristine Brancolini, Liz Shaw (University of Pittsburgh at the time), and Rebecca Graham (Johns Hopkins University at the time) presented a program at

¹⁴Some of the institutions that have hosted SLIS interns include the American Museum of Natural History (New York City), Brigham Young University (Provo, UT), Museum of Arts and Design (New York City), Pennsylvania State University (University Park, PA), and Yellowstone National Park Archives. GSLIS students regularly complete practicums at institutions around the U.S. (see list of practicum sites at: http://www.lis.uiuc.edu/gslis/degrees/courses/practicum_sites.html).

¹⁵Amanda Spink and Colleen Cool, “Education for Digital Libraries,” *D-lib Magazine*, May, 1999. URL: www.dlib.org/dlib/may99/05spink.html (January 8, 2003).

the *Digital Library Federation Forum*, in November 2002, called “Staffing the Digital Library,” and Brancolini and Javed Mostafa offered a half-day workshop at the *Joint Conference on Digital Libraries 2002*, “Developing Digital Libraries Education and Training Programs.” For a description of these events and links to presentations, please see *Related Activities*, Attachment 1.

During discussions with program and workshop participants, we learned that we are all having similar experiences. Schools of library and information science report growing interest in a digital library specialization and a desire to develop appropriate content and learning activities for the courses. Students report that they cannot find enough courses to prepare them for digital library work and that the courses offered often do not meet their needs. Students expressed a need for:

- Technical courses pitched at the proper level;
- An emphasis on problem solving;
- Less emphasis on the theoretical or more balance with the practical;
- Some faculty with digital library experience; and
- More interaction between teaching faculty and working digital library professionals.

Although there are some basic courses introducing students to work in digital libraries, there are few advanced courses, and the ones that exist are not integrated into an actual program. The recently announced program at the School of Information Studies at Syracuse University, for example, repackages existing courses into a certificate program, but has not developed a curriculum based on a needs assessment. Students report a need for a well-planned, relevant, and cohesive specialization in digital libraries. By partnering with working digital library professionals, the schools of library and information science can bring their students an appropriate blend of theoretical and practical knowledge. Team teaching and distance education will provide a wider range of course offerings and internships than students could receive at either one of the institutions alone.

3.3.3. Project Goals and Objectives

Goal 1: To develop a curriculum that meets the needs of graduate library students who seek professional employment in digital library programs in libraries and archives.

Objective 1.1: Determine the requirements of digital library jobs by analyzing the content of digital library job advertisements; surveying and interviewing digital library managers and practitioners; surveying and interviewing current library school students working in digital library programs; and surveying and interviewing recent graduates working in digital library programs.

Objective 1.2: Translate these job-related needs to course content and learning activities and work with faculty to insure that courses incorporate appropriate theoretical content.

Objective 1.3: Develop a group of courses that would become the basis for a digital library concentration for master’s degree students and a post-MLS specialization.

Goal 2: Offer the courses and subject them to rigorous evaluation to insure that they fulfill Goal 1. See Section 3.8.

Goal 3: Offer paid digital library fellowships at IU and UIUC based upon our findings with regard to knowledge and skills. We anticipate formal courses will be more successful for transferring knowledge while work experience in a digital library operation will be more successful for acquiring skills. Although both IU and UIUC offer digital library internships or assistantships, they are not based on a set of formal learning objectives and neither institution currently offers a paid internship focused on digital librarianship.

Goal 4: Explore the best way to structure residency experiences by creating positions for and hiring post-master's degree, full-time digital library residents in Years 2 and 3 of the project.

Goal 5: Disseminate the results of our work at a conference to be held near the end of the project.

3.3.4. Project Activities

For more detail regarding these activities, please see Section 4, Schedule of Completion.

Year 1: September 2004 – August 2005 Year 1 will include data collection and analysis (to be led by the UIUC Library Research Center) to inform curriculum development and an aggressive effort to recruit for diversity and in targeted areas of expertise. Relevant graduate credit courses currently available at both library schools will be evaluated for suitability and selected for inclusion as part of a more formal specialization. Appropriate courses (those that can be taught at a distance and that would fill gaps at partner library school) will be considered for cross-listing beginning with the Fall 2005 semester. Additional gaps will be identified and new courses created jointly to fill in remaining gaps. In particular, we will include as part of this specialization a required introduction /overview digital library course (in part to serve as a screening course for those considering the specialty). Courses will, of course, be available as conventional electives for those not pursuing a digital librarianship specialty. We also will include creation of at least two team-taught practical courses (each campus to be taught in both Year 2 and Year 3) involving both librarians and library school faculty. These will likely be taught as laboratory classes with a weekly discussion/lecture section combined with a weekly hands-on laboratory section. The continuing education/non-credit courses currently taught by library staff at both IU and UIUC would be used as the basis for the laboratory parts of these classes. These courses would almost certainly be cross-listed and may even be taught jointly by faculty/library staff at both institutions.

Initial recruiting for this specific program will also begin in Year 1 of the project, with the first digital library fellowships, one year for MLS candidates and two years (including paid internship) for post-MLS candidates, awarded for academic year 2005- 2006.

Year 2 (September 2005 - August 2006) will focus on implementation of curricular changes and the development and implementation of internships and the post-degree residency program at each school as a capstone experience. Internships would be a required part of post-MLS degree specialization and are currently envisioned as full-time summer-long or semester-long, project-oriented appointments in the libraries at UIUC and IU. Credit would be given for these (also could serve as basis for the UIUC CAS-required two-unit project), and pay or stipend would also be given. We would want to allow for UIUC GSLIS students to do residency at the IU Libraries and vice versa.

Year 3 (September 2005 - August 2006) will be similar to Year 2, but will include additional assessment features and a conference to disseminate project results. We anticipate the conference, publicized nationally, will attract broad attendance from libraries and library schools represented by the Committee on Institutional Cooperation (the Big Ten academic alliance, which includes Michigan, Iowa, and Wisconsin). Note that by Year 3, one set of students will have completed the program. From them we will know something about their job opportunities and placement and will have at least preliminary feedback to inform next steps of establishing the permanent curriculum. The conference program, therefore, might include a panel discussion with some of the students who completed the program in Year 2.

3.4. Management Plan

Kristine Brancolini and Javed Mostafa will serve as co-Principal Investigators at IU, as well as co-project directors of the overall project. Linda Smith and William Mischo will serve at co-Principal Investigators at UIUC. A half-time project librarian working in Bloomington will coordinate the day-to-day activities of the

project and the Bloomington interns, residents, and fellows, and a half-time project librarian at UIUC will coordinate day-to-day project-related activities in the UIUC Library. One SLIS faculty member will receive release time of 25% to work on the curriculum development and course development activities during Year 1. At UIUC, one GSLIS faculty member will also receive release time to plan course development with UIUC librarians engaging in digital projects. This will be done in conjunction with all IU planning. The courses developed at each institution will/may differ and will reflect the strengths of each institution's faculty and library practitioners. Several IU and UIUC Library faculty working on digital library grants and projects will be involved in the supervision of work performed by the IU and UIUC interns and residents.

Communication with the digital library community will be an important component of the project. In order to facilitate this communication, the project will employ an advisory group. The advisory group will include a cross-section of local stakeholders, faculty from SLIS (IU) and GSLIS (UIUC); students from both schools, preferably students who plan to enroll in or are enrolled in the master's degree program with a digital library concentration or the post-MLS digital library specialization; and digital library professionals from both institutions. This group will meet as needed to advise the project management team, but no less than twice a year each year of the grant, meeting sometimes in Bloomington and sometimes in Urbana-Champaign.

3.5. Budget

The IMLS-funded portion of the budget will be used to pay for the following project-related expenses:

- Contract for consultation services of the Library Research Center at UIUC
- One half-time Project Librarian, resident on the Bloomington campus
- One half-time librarian at UIUC to coordinate the work of the interns and residents
- One quarter-time release for a SLIS faculty member in Year 1 to lead the curriculum development activities on the Bloomington campus, working with the Curriculum Committee
- One half-time release for a GSLIS faculty member in Year 1 to perform the same functions on the Urbana-Champaign campus
- Computer workstations for some temporary project staff (see below for contributed equipment)
- Funding for 20 fellowships, 10 at IU and 10 at UIUC, in Years 2 and 3, including tuition remission and a stipend
- Funding for four digital library residents, 2 at IU and 2 at UIUC (provided at UIUC by cost-share) for one semester each
- Funding for a digital library education conference in Year 3
- Travel expenses for Project Team members to meet with one another
- Travel to conferences to report upon the project

For details and rationale, please see Section 5, Budget Justification.

3.6. Contributions

The contributions to the project from Indiana University will be in the form of salaries paid to the two co-principal investigators for their project management responsibilities, fees paid to adjunct faculty who will be teaching in Years 2 and 3, the evaluation and assessment work in Year 3, and some computer workstations for project staff.

The contributions to the project from University of Illinois at Urbana-Champaign will be in the form of salaries paid to the two co-principal investigators for their project management responsibilities, salaries paid to librarians who will supervise interns and residents, some conference travel, and tuition for Digital Library Fellows.

3.7. Personnel

Project personnel will consist of four principal investigators, two from IU and two from UIUC, a half-time Project Librarian (to be hired), two part-time faculty from SLIS and GSLIS, and a half-time librarian at UIUC. Additional named library staff at IU and UIUC have been identified who will support internships and residencies of students participating in this program. The principal investigators will be:

- Javed Mostafa is currently the Victor H. Yngve Associate Professor of Information Science and Associate Professor of Informatics at Indiana University, Bloomington. Recent research projects include the Digital Libraries Phase II initiative of NSF (Award #9817572), the Information Technology Research Phase I initiative of NSF (Award #0081944), and the Cultural Library Indexing Our Heritage (CLIOH) (<http://clioh.informatics.iupui.edu/>), funded by IMLS.
- Kristine Brancolini is Director of the Indiana University Digital Library Program, which was established in 1997. Her most recently completed digital project is *Charles W. Cushman Photograph Collection* (www.dlib.indiana.edu/collections/cushman), funded by a grant from IMLS (2000-2003).
- Linda C. Smith is GSLIS Professor and Associate Dean. She coordinates all GSLIS academic programs and oversees and teaches in the LEEP (online) option of the GSLIS MS and CAS programs.
- William Mischo is Head, Grainger Engineering Library Information Center and Professor of Library Administration at UIUC. He is currently the Principal Investigator of an NSF NSDL project (2003—2004) and co-PI on an IMLS integration grant (2003—2005).

The Project Librarian will be an essential component of the project's success. This individual will be responsible for all day-to-day management of the project, participate in the curriculum research and development work, coordinate the interns and fellows, write reports and make recommendations to the project team, handle marketing and publicity for the project, and plan the conference.

Other librarians who will contribute to the project are: Perry Willett, Associate Director for Projects and Services, and Metadata Librarian (currently vacant), both from IU's Digital Library Program. Additional Grainger Library and UIUC Library faculty and staff will be involved in the coordination of interns and the development and teaching of courses. They include: Chris Hamb, Assistant Engineering Librarian for Digital Library Projects; Timothy Cole, Mathematics Librarian; Mary Schlembach, Assistant Engineering Librarian for Digital Services; Robert Ferrer, Grainger Library Network Administrator and Research Programmer; and the Head of the Digital Services and Development unit of the UIUC Library. These individuals bring a wealth of experience with digital library grant projects, including NSF/DLI, IMLS, and NSF/NSDL grants.

J. David Perry, Director of Evaluation and Testing, IU Bloomington Evaluation and Testing Services, will be leading the assessment and evaluation portion of the project described below.

3.8. Project Evaluation

This effectiveness of the project will be evaluated from a number of perspectives, all of which lend themselves to measurable results.

1. The courses that are developed and taught will be evaluated for content and instructional effectiveness. We will work with a unit on the IU Bloomington campus that has extensive experience in this area, Instructional Support Services/Bloomington Evaluation Services and Testing (BEST) and the Center for Teaching Excellence at UIUC, which offers an online course evaluation capability called EON (Evaluation ONline).
2. Students who have completed courses and gone on to internships or other positions in digital library programs will be surveyed and interviewed to help determine the appropriateness of the content and learning activities from each course.

3. We will also apply outcome-based measures, answering the following questions:
 - Were our students more likely to be employed in digital library programs as a result of taking one or more of these courses?
 - Did our students meet more of the qualifications for digital library jobs?
 - Were any of these courses adapted for and taught at other schools of library and information science?
 - Did this program serve as a model for other institutions, resulting in the establishment of other similar programs?

We plan to use a number of methods to gather this data. We will rely on standard instruments for course evaluation and then go beyond them to ask more specific questions about the background of students in the courses, their work experience, and their job aspirations. We plan to interview in depth some students, faculty, and digital library professionals who later employ students who have taken the courses. Much of this activity will occur in Year 3. With a combination of surveys and interviews we will:

- Follow up with students who were enrolled in the courses in Year 2 to determine the fit between course content and job relevance.
- Follow up with course instructors to determine their assessment of the courses and the preparation of the students; some courses may need additional pre-requisites.
- Follow up with employers of fellows for feedback on academic preparation for the work and other aspects of the program.

Formative and summative evaluation will be a central focus of our project overall. We have a commitment to using this information to create the best possible learning experience for students and to sharing our findings broadly with the education and digital library communities.

3.9 Dissemination

Project findings will be widely disseminated through a variety of channels. A project Web site will regularly publish project updates and the reports of the various studies and evaluations that we will produce. The project directors will publish papers about the project and give presentations at appropriate conferences, such as the *Joint Conference on Digital Libraries*, the *ALISE (Association for Library and Information Science Education) National Conference*, and the *ALA Annual Conference*. One of the most important dissemination tools will be the conference on digital library education and training that we will offer in Year 3 of our project. We will bring together a number of speakers on topics of interest to digital library educators and working professionals. We will also report upon our project, including the findings of our data gathering and analysis, our curriculum development and course design work, and the results of our evaluation of both.

3.10 Sustainability

The project will result in a master's level digital library concentration and a post-MLS specialization that will become part of the curricula of the School of Library and Information Science at Indiana University and the Graduate School of Library and Information Science at the University of Illinois at Urbana Champaign. We firmly believe that the curricula we develop can be sustained by our two institutions without additional funding. The more experimental aspects of the project include the paid internships, the possibility of offering at least an unpaid, for-credit internship to each student, and the post-MLS full-time residents. Throughout the project we will evaluate the need for these elements, their feasibility, and sources of funding for them. We are committed to institutionalizing the programs that will result from this project.