Integrating Assessment into Recurring Information Literacy Instruction: A Case Study from LIS Education.

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Introduction

This case study from the University of Illinois at Urbana-Champaign (UIUC), reports on a simple, cyclical process to assess information literacy instruction in a hybrid distance education context. The importance of assessing information literacy instruction is stressed in writings by academic librarians, who recommend varied methods to collect and analyze data. Despite its acknowledged utility, assessment can be difficult to incorporate consistently into library instructional programs. One barrier is the perception that genuinely effective assessment demands a significant commitment of time and special expertise (Morgan, 1995. p. 95). Further, changes in academic programs from year to year can make it difficult to interpret feedback over time or to institute improvements on a continuous basis. The inability to implement changes based on evaluative feedback can also discourage assessment – whether the roadblocks are insufficient resources or instructors' insistence on doing things a certain way.

The experiences and findings reported here suggest that even small assessment efforts can make a meaningful difference in the acceptance of information literacy as a critical component of the curriculum. By sharing assessment results, librarians generate good will between the library and the academic program. And by demonstrating an enthusiasm for change and a shared commitment to student learning, librarians become partners in fulfilling a school or department's instructional mission.

This article opens with background on the LEEP program at the Graduate School of Library and Information Science (GSLIS), UIUC. A description of the library services provided to its students, emphasizing the instructional components, is followed by a discussion of data from student evaluations gathered over a four year period. The ways in which these data are shared and used to improve the information literacy component of LEEP orientation are outlined. Finally, a preliminary report on the modification of the library's instructional model for LEEP for the on-campus environment and its initial evaluation by students is presented.

The LEEP program

UIUC GSLIS offers both residential and distance education options leading to the masters in LIS. The distance education option, LEEP (originally an acronym for Library Education Experimental Program), is a blend of online and on-campus learning environments. The online component utilizes both synchronous and asynchronous computer-mediated communication technologies and is often referred to as a "hybrid" delivery system. On its official website, LEEP is promoted as a "scheduling option" rather than a distinct degree program, signaling that the course content and quality are equivalent (and in most cases identical) to on-campus classes. Approximately 120 new LEEP students – one half of the total incoming students in the MS program -- enroll each July and spend an intensive ten-day orientation period on the UIUC campus. During this time they participate in a highly condensed required course (LIS 502: Libraries, Information and Society) and receive several hours of hands-on training from instructional technologists and librarians. The goal is that all students, by the end of the initial residency, will demonstrate sufficient computer literacy--in the specific technologies utilized in LEEP--

and information literacy–in the discipline of LIS--to successfully embark on their future classes. LIS 502 includes assignments that require use of library- and internet-based information resources, so students have immediate opportunities to practice their information retrieval skills. Students find the orientation period to be both intellectually invigorating and physically exhausting, and from the beginning have referred to it as "LEEP boot camp."

After LEEP students complete their summer orientation, they take courses at a distance on the normal semester calendar. These courses are conducted as live sessions delivered via the internet, usually on a weekly schedule. A typical live session involves a one-way audio broadcast by the instructor (who may be a resident member of the GSLIS faculty or a distant professor or practitioner) and multi-user text chat, supplemented by slides or other visual media mounted on the web. Guest speakers often participate in the live audio broadcasts; they may be located on campus or anywhere in the world. Each class holds one day-long, face-to-face session in Champaign-Urbana at approximately the midpoint of the semester. Asynchronous communication tools such as web-boards and email supplement the live classes. Although there are clusters of LEEP students in certain regions of the country, to date the program offers no formal group instruction away from campus.

This brief summary scarcely conveys the richness of the LEEP curriculum and the unique student-faculty culture that has flourished within the program. For additional background and analysis, see Smith, Lastra, and Robins (2001), Estabrook (2003), Haythornthwaite and Kazmer (2004), and numerous other works cited in the comprehensive online "LEEP Bibliography." Up-to-date information on the program's structure and requirements is available at http://www.lis.uiuc.edu/programs/leep/.

Library services for LEEP

The ACRL *Guidelines for Distance Learning Library Services* articulate a philosophy of service that is put into practice in the provision of library services to LEEP students and faculty:

> Access to adequate library services and resources is essential for the attainment of superior academic skills in post-secondary education, regardless of where students, faculty, and programs are located. Members of the distance learning community are entitled to library services and resources equivalent to those provided for students and faculty in traditional campus settings. (Guidelines, 2004)

With half of the masters level students at GSLIS now participating in the LEEP program, second-class service for LEEP students is clearly unacceptable. Strategies for providing equivalent (if not identical) support for remote users include: delivery of materials from the print collections, coordinated through UIUC's Academic Outreach Library, a unit of the campus's Continuing Education division; extensive licensing of online content in LIS, including journals, reference sources and e-books, by the LIS Library, a departmental unit of the University Library; and email and live chat reference services, provided by the LIS Library and the central Reference Library respectively. In addition, the existence of the LEEP program has spurred the local development of web-based information sources, such as the LIS Library's Virtual New Books Shelf (http://www.library.uiuc.edu/lsx/acquis.html) and was the original impetus for the implementation of electronic course reserves.

Information literacy instruction is a critical element in this mix of services. Again, this conforms to the ACRL guidelines, which state:

> The instilling of lifelong learning skills through general bibliographic and information literacy instruction in academic libraries is a primary outcome of higher education. Such preparation and measurement of its outcomes are of equal necessity for the distance learning community as for those on the traditional campus. (Guidelines, 2004)

Library instruction is woven into the boot camp schedule of course work and training. In an initial workshop at the start of boot camp, students are introduced to core indexes and abstracts, the online catalog, and special features of the UIUC library's web site, such as the local database of electronic resources and the electronic reserves system. On the same day they tour the physical library. These activities are designed to equip them with basic knowledge to complete assigned projects during the boot camp period. A second workshop a few days later focuses tightly on search strategies for the challenging "tracking assignment," which is described below. Shortly before they depart from the campus, they are taught in a third librarian-led workshop how to access online library resources remotely and how to request delivery of printed materials. This workshop also introduces various channels (telephone, email, live chat, instant messaging) for obtaining remote reference assistance.

This describes the configuration of information literacy instruction during boot camp as of summer 2005. Over time, both the content and its presentation have changed, largely in response to student evaluations and changes in the LIS 502 curriculum, as well as advances in resources and technologies on the library's part. The boot camp workshops are the only mandatory components of information literacy instruction for LEEP students. Some benefit from additional exposure to library instruction within specific classes. Others may utilize the resource guides that are created for such occasions and posted on the LIS

Library's web site. During the once-a-semester on-campus sessions, the LIS Librarian offers drop-in sessions in a GSLIS computer lab, where students can refresh their knowledge of basic sources and strategies or seek advice on meeting new information needs.

Review of the literature

Libraries and LIS Distance Education

Even though nearly all ALA-accredited LIS programs today offer some form of distance education (ALA, 2006), surprisingly little has been published in the professional literature about library services for students in these programs. In the general literature about off-campus library services, single-institution case studies are prominent (Slade, 2005); this is true of the meager writings on library services for LIS distance education as well. Kathleen Burnett and Marilia Painter's description of library support for the Florida State University School of Information Studies web-based program is among the best of this genre, providing a detailed narrative of how library services evolved and a rare glimpse at the various players and organizational politics that shaped them (Burnett & Painter, 2001). Studies by Kim & Rogers (1983), Barron (1987), Hoy and Hale (1991), Stephens (1998), and Douglas (2002) report empirical data on diverse aspects of library service for LIS distance education, but the programs they describe are neither online nor hybrid.

In an earlier paper on the UIUC program, Susan Searing reported that, although the library needs of LEEP students have much in common with all distance education students' needs, the discipline itself adds additional challenges to the task of designing and delivering appropriate library services. These challenges include: the information-intensive nature of the graduate LIS curriculum; the scarcity of specialized research-level LIS

collections; the enduring value of the physical library as a framework for understanding and accessing library resources and services; and the importance of real-life librarians as professional role models. (Searing, 2004)

Moving beyond a focus on a single institution, Don Latham and Stephanie Maatta Smith (2003) surveyed the main libraries of the 28 campuses that offered ALA-accredited masters degrees through distance education at the time of their study and received responses from half of them. They also examined library web sites. Although LIS distance education has expanded since they conducted their study, it remains the most thorough overview to date of library services for this clientele. Latham and Smith found that basic services--such as reference, instruction, and access to print and electronic collections--are routinely provided to students in LIS distance education. Libraries employ various marketing strategies but rely primarily on their web sites to alert students to available services. Most librarians charged with providing distance education services have no special training. Importantly, and regrettably, needs assessment and evaluation techniques are under-utilized (Latham & Smith, 2003). Despite the paucity of published data, there is evidence that libraries are doing an acceptable job serving LIS distance education students: Mansour A. Alzamil (2002) documented that LIS faculty are generally satisfied with the library support for their online courses.

Less common, yet very useful for understanding the library customers' perspective, are first-hand accounts by LIS students who have completed their degrees at a distance. When Michelle Kazmer interviewed LEEP students, she discovered preferences for library services within the broader context of adult learning styles and the rigors of technology-mediated education. The students expressed their desire for rich online collections, rapid

delivery of printed materials, reference service and technical support during evenings and weekends, appropriate training options, and a single point of contact (Kazmer, 2002).

Alma Dawson and Dana Watson (1999) present a unique perspective on distance education library services through the lens of systems theory. Drawing on their experiences with the LIS program at Louisiana State University, they remind us that both libraries and distance education programs are complex systems embedded in the larger systems of the university, higher education, and government. By understanding these interacting systems, they assert, librarians can discern new opportunities to form active partnerships with teaching faculty and become "integral to the success of the course" (p. 20). This theoretical viewpoint implies a central position for librarian-initiated information literacy activities in the LIS curriculum.

Research on LEEP

The LEEP program exhibits a strong internal culture of assessment. Pat Lawton and Rae-Anne Montague declare:

> Much of the program's success can be attributed to the variety of formal (internal and external) evaluation processes that have guided program development. They include review by an independent consultant, seminannual faculty conference call discussions on teaching in LEEP, a comprehensive five-year program review, and standard university course evaluations (used in all classes). These processes have provided insights into specific aspects of the program and have also been used to demonstrate quality to prospective students, employers, university administrators, and others. (Lawton and Montague, 2004. 199).

Lawton and Montague report on yet another assessment activity, a face-to-face retreat that brought faculty, students, alumni, technical support staff, librarians, and administrators together in 2002 "to identify and describe a model of best practices" (199). In the conversations held during the weekend retreat, and before and after it via web bulletin boards, five best practices emerged: 1) orientation (i.e., boot camp); 2) on-campus sessions; 3) group work; 4) synchronous sessions; and 5) careful attention to order and organization. The strength of LEEP's hybrid format is evident, since the first two elements (orientation and on-campus sessions) involve face-to-face activities, the third (group work) may be accomplished in personand/or online using synchronous and/or asynchronous tools, and the fourth (synchronous sessions) refers to the real-time online classes. The final best practice, order and organization, is an overarching quality that enables the lively mix of technologies and teaching styles to succeed.

In addition, several research studies have been undertaken to pinpoint best practices in the LEEP program and in online education generally. One research strand has explored the development and maintenance of social networks in the LEEP environment (Haythornthwaite et al., 2000; Haythornthwaite, 2003; Robins, 2002; Ruhleder, 2002). Another strand focuses on the intersection of "the LEEP world" with students' work and home lives (Kazmer, 2000; Kazmer & Haythornthwaite, 2001). An intriguing set of papers edited by Caroline Haythornthwaite and Michelle Kazmer (2004) reveal what teachers, administrators, technical support staff, and librarians have learned from their involvement with LEEP. Of particular significance is the commitment shared by LEEP faculty and students to create and sustain a community that fosters collaborative activities. Several researchers have examined the factors that underlie this philosophy. Christine Jenkins, for example, asserts that the LEEP synchronous online format provides a virtual "ludic space"

that encourages learning and creativity by allowing instructors and students to "play" together (Jenkins, 2004). Betsy Hearne and Anna Nielsen discovered that LEEP functions as a true community and sub-culture, as documented in a rich collection of LEEP folklore (Hearne & Nielsen, 2004). Lawton and Montague, mentioned above, describe the people involved with LEEP as a "tribe" and assert that "particularly important is that instructors and students alike have been consulted for their perceptions of what works and what doesn't" (Lawton & Montague, 2004. 211).

Information Literacy and Distance Education

In 2000, the Association of College and Research Libraries (ACRL) surveyed libraries to delineate trends in distance learning library services. At that time, face-to-face instruction was still being used by almost 78% of the responding libraries to deliver library instruction to students in distance education classes. Hugh Thompson speculated that "the high percentage of face-to-face methodology might be explained if instruction is delivered most often in orientation sessions on site before the beginning of courses" (Thompson, 2002). A more recent survey of Association of Research Libraries (ARL) member libraries indicated that 67% of the respondents are still using face-to-face instruction for distance education students; this method is second in popularity only to asynchronous web-based methods (ACRL, 2005). Despite the documented prevalence of face-to-face library instruction, published reports on information literacy for distance education programs are overwhelmingly concerned with asynchronous, computer-mediated methods.

Older writings about distance education library services often described library instructional programs at off-campus class meeting sites, where librarians sought innovative ways to provide hands-on bibliographic instruction despite the lack of a physical

library collection. More recently, in support of online learning initiatives, many librarians have successfully developed teaching tools that can be accessed asynchronously via the internet. Arguably the most exciting are interactive web-based tutorials that utilize the latest in multimedia technologies. Such tutorials are effective not only for students at a distance, but also for on-campus students who prefer to learn on their own rather than attending a workshop. Other published case studies describe how librarians use synchronous distance teaching technologies, such as videoconferencing or live chat. Nancy Dewald et al. provide a solid overview of instructional design issues for information literacy instruction at a distance, emphasizing the advantages and disadvantages of various technologies, the incorporation of active learning, and methods for assessment (Dewald, 2000).

By contrast, almost nothing has been written about hybrid environments like LEEP, where face-to-face instruction prepares students for remote use later. Further, only a handful of authors have compared face-to-face and online instruction, and even fewer have compared these experiences within discipline-focused instruction at the graduate level. A recent survey of ARL libraries' services for distant students discovered that both subject specialists and designated distance education librarians provide bibliographic instruction services (Yang, 2005). Johanna Tuñón (2002) describes an information literacy curriculum for doctoral students in education that was first developed as an online course and later revamped for face-to-face delivery. A case study by Mou Chakraborty and Shelley Victor (2004) describes an in-depth information literacy curriculum for graduate students at Nova Southeastern University, which is delivered simultaneously to local and distant students via compressed video. The authors compare the different experiences of the local and distant students; they also discuss the transition from a one-shot BI session to a focus on

information literacy spread over three sessions. Like their program, the LEEP library instruction component has expanded over time and subtly shifted its focus to stress general information-seeking principles and mindsets, in addition to familiarizing students with key databases in LIS.

While most writings on information literacy for distance education students focus on the technologies used for delivery, valuable insights into the students' needs can be gleaned from several chapters in *Teaching the New Library to Today's Users* (Jacobson & Williams, 2000). In the case of LEEP, the sections on adult learners (Holmes, 2000), graduate students (Williams, 2000), and distance learners (Heller-Ross & Kiple, 2000) are most relevant.

The most troubling fact to be gleaned from the literature is the finding that over a third of libraries at ARL institutions with distance education programs provide *no* information literacy instruction for off-campus students (ACRL, 2005).

Assessment and Evaluation of Information Literacy Efforts

There is a large body of published literature on assessment and evaluation in the field of information literacy and library instruction. Works that document best practices in this area include several compilations of model evaluation forms (Shonrock, 1996; Merz & Mark, 2002; DeFranco & Bleiler, 2003). Scott Walter and Lisa Hinchliffe (2005) surveyed ARL libraries to determine the kinds of instructional improvement efforts that are undertaken. Paying particular attention to organizational culture, program structure, and professional development activities, they also document techniques for evaluation by supervisors, students, and peers. Despite widely available models for evaluation, one study of ARL libraries reported that only 62% of them formally assess their instructional programs (DeFranco & Bleiler, 2003). The situation is worse among ARL libraries

providing instruction for distance education students; only 11% conduct formal assessment in this area (Association of College & Research Libraries, 2005).

As this literature has evolved, the word "evaluation" has come to be used most often in a narrow sense, that is, the measurement of how well a session or program has met its goals and satisfied its customers. Evaluation may include student feedback on facilities and individual teachers' classroom performance. The word "assessment," on the other hand, is more often used to encompass a range of pre- and post-instruction measures. Assessment includes strategies that provide information for curricular planning (this is sometimes dubbed "needs assessment") as well as means for testing the effectiveness of library instruction, or "outcomes assessment" – i.e., did the students really learn what the librarian intended to teach? *ODLIS: Online Dictionary for Library and Information Science* defines "assessment" as "quantitative and qualitative measurement of the degree to which a library's collections, services, and programs meet the needs of its users, usually undertaken with the aim of improving performance…" (Reitz, 2006) Indeed, both evaluation and assessment efforts are usually framed in the context of continuous improvement, blurring the lines between the two concepts in practice.

Assessment techniques in information literacy programs can be quite elaborate, involving rigorous sampling and statistical analysis. The value of control groups (for example, to compare online versus face-to-face teaching) and pre- and post-tests is well established. However, assessment can also be less rigorously scientific and still yield useful results. Methods for gathering feedback are varied, ranging from printed forms, to online questionnaires, to focus groups. A survey of ARL libraries in 2003 confirmed that paper forms are the most commonly used formal assessment mechanism for face-to-face

instruction (DeFranco & Bleiler, 2003). The LEEP library workshop evaluation process is therefore similar to that employed in most academic library instruction programs.

Evaluation of LEEP information literacy efforts.

The survey instrument

LEEP students complete a paper-and-pencil survey at the end of the final library workshop during their summer orientation. The questions elicit both quantitative and qualitative data. The LIS Librarian tallies the results and transcribes the answers to the open-ended questions. Shortly thereafter the results of the survey are shared with the instructors of LIS 502, the administrator of the LEEP program, the GSLIS faculty member who serves as library liaison, and the associate dean of GSLIS.

The survey questionnaire has been modified over time to reflect changes in the content and organization of the instruction, and to keep the instrument short and focused on gathering feedback that is difficult to get otherwise. Since enabling comparison over time has been a goal of the evaluation since the beginning, however, such modifications to the instrument have been minimal. For example, the first survey in 2002 included three questions with five-point agreement scales to get feedback on the instructor's effectiveness as a teacher: "the instructor was knowledgeable"; "the instructor handled questions well"; and "the instructor was approachable." Since 98-100% of respondents chose "agree" or "strongly agree" on all three dimensions, it was felt that this question did not yield useful data for improvement efforts. It was replaced in 2003 with a single open-ended question soliciting comments about the instructor. More than half the respondents typically do provide some comment. While the majority of the comments are gratifyingly laudatory in non-specific ways – "great" and "helpful" are the two most common adjectives – this question has also spotlighted problems with too-fast pacing of the presentation. Specific

positive comments, such as "cheerful," "friendly," and "knowledgeable" also pinpoint what it is that students value in an interaction with the librarian and are a reminder that the librarian must model attitudes as well as skills in order to inspire confidence among information seekers.

Similarly, in 2002 and 2003 a question was posed about the facilities (a classroom with networked laptop computers), since the room was new at the time and untried for this type of instruction. This question was dropped once the suitability of the setting and equipment was proven.

Over the course of four summers, 2002 to 2005, 218 students have completed the evaluation form. The number per year ranges only slightly, from 52 to 58, despite the increases in enrollment and boot camp participation over those years. Unfortunately, a decreasing percentage of the students attend the final workshop, where the evaluation form is administered. They may view the workshop as optional (although it is incorporated into the syllabus for the week), but most likely they choose to use the time to prepare for the final exam in LIS 502, which occurs the following day. Some students, exhausted by the heavy schedule of classes and workshops, have admitted that they skipped the library workshop to take a much-needed nap!

The short instrument in use today (see Appendix) attempts to gauge three different but related dimensions of effective instruction:

- How satisfied were students with their information literacy learning experiences?
- How well did the curricular content match their needs?
- How well did the instructor teach?

<u>How satisfied were students with their information literacy learning experiences?</u>

There are known drawbacks to using students' self-reported satisfaction as an evaluative measure of instruction. First, students may "grade high" simply because they are appreciative of the effort made on their behalf. Second, as some responses to open-ended questions on the LEEP survey demonstrate, students may blame themselves rather than the instructor if they do not understand the content presented in the session:

"I am at a more remedial level than most…"

"The effort was admirable but the student was slow (me)."

"I was only worried because I'm not a great computer-user."

"There were times I was having trouble following. Might have been the fatigue."

Third, immediate expressions of satisfaction at the end of boot camp may not predict the students' opinion of the instruction's value in the longer term. While there is a very condensed feedback loop during the boot camp period – because students can use what they learn within a matter of hours or days to complete LIS 502 assignments – there is no measure of whether they use, or use effectively, the same sources and strategies in subsequent classes or independent research. Self-reported satisfaction is a questionable measure of genuine information literacy.

Because of these issues, the evaluation form includes no general question about student satisfaction. However, students often indicate their satisfaction or dissatisfaction in the open-ended questions throughout the survey:

Typical comments about the first library workshop:

"Everything was great. It wasn't overly basic or complicated."

"A little overwhelming."

"Most important workshop – helped the most."

"Too fast. Too much info. Need handouts."

Typical comments about the final library workshop:

"2nd workshop covered everything I was wondering about—thanks!"

"This will help prepare me for the fall semester."

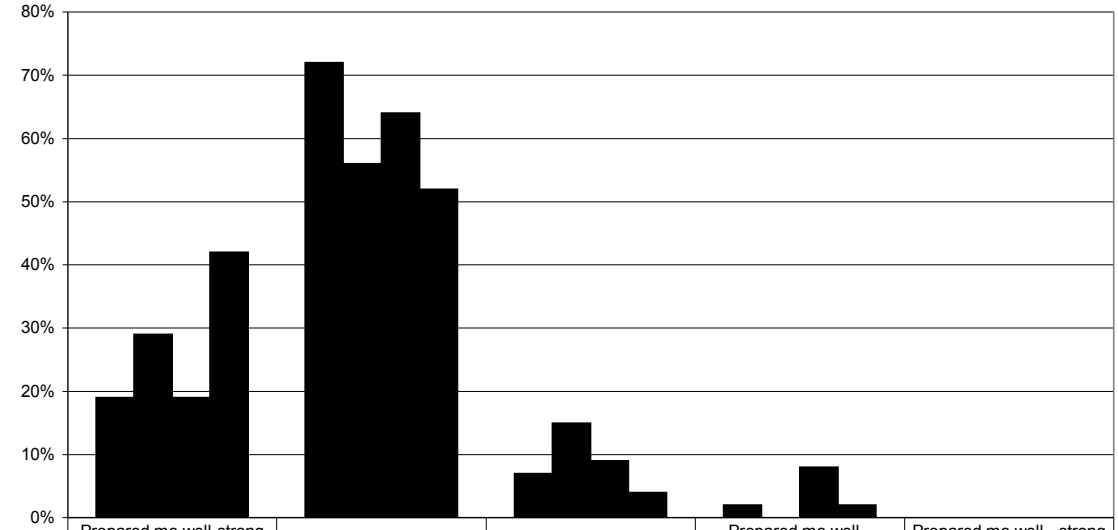
"It was VERY helpful to have a refresher."

"Fast presentation—good overview."

How well did the curricular content match their needs?

The clearest indication of whether the information presented during the library sessions fulfilled students' needs is provided by questions on the evaluation form that ask the students about the research assignments in LIS 502. While there has been some variation over time, which may reflect changes in the nature of the course assignments as well as changes in the library instruction component, students have generally reported that the instruction prepared them well to conduct research for their assignments (Figure 1).

"The first workshop prepared me to do research for LIS 502 assignments."



	Prepared me well-strong agree	Prepared me well- agree	Prepared me well - neutral	Prepared me well - disagree	Prepared me well - strong disagree
2002	19%	72%	7%	2%	
2003	29%	56%	15%		
2004	19%	64%	9%	8%	
2005	42%	52%	4%	2%	

Figure 1

Information overload is a persistent problem in LEEP information literacy instruction. The students need to acquire information retrieval skills very quickly in order to put them into practice for course-related research, but they are also immersed in technology training and beginning an intensive curriculum on the role of libraries and information in society. At the same time, they are readjusting to the university environment, including dorm life. For many, their families and jobs are only a cell phone ring or mouse click away, creating additional pressures that affect their ability to concentrate and learn. Therefore, those who complete the evaluation form are asked to judge whether the amount of information presented at the initial library session was too much, too little, or just the right amount. Over the four year period, the percentage of students confirming that the amount of information was just right ranged from 73% to 84%. The majority of the remainder felt that too much information was presented.

Pitching the amount and type of information correctly is a perennial challenge. LEEP students tend to be older than on-campus students, and many are employed in libraries. These students often arrive with a well developed knowledge of library resources and search methods. Others are career changers who have never worked in a library and have not engaged in college-level research for many years. Frequently these students are initially bewildered by the plethora of databases and computer-mediated services today's academic library offers.

In 2004, the workshop schedule and content was modified in order to prepare students better for a new, challenging research task in LIS 502, known as the "tracking assignment." The students must write a brief on a current "hot topic" and design a strategy for keeping up-to-date. (In 2006 the assigned topics for the tracking assignment included

the Digital Millennium Copyright Act, the USA Patriot Act, the Public Library of Science, and the World Summit on the Information Society.) To complete this assignment successfully, students need to venture beyond the familiar sources for book and journal citations, to explore the websites of advocacy and research organizations, blogs, news sources, official government documents, and more. To facilitate their searching across this wider universe of resources, the initial two-hour workshop was reduced to 90 minutes, and a new 90 minute workshop devoted to the tracking assignment was added. Survey results show that the tracking assignment workshop has proven successful at preparing students for that task:

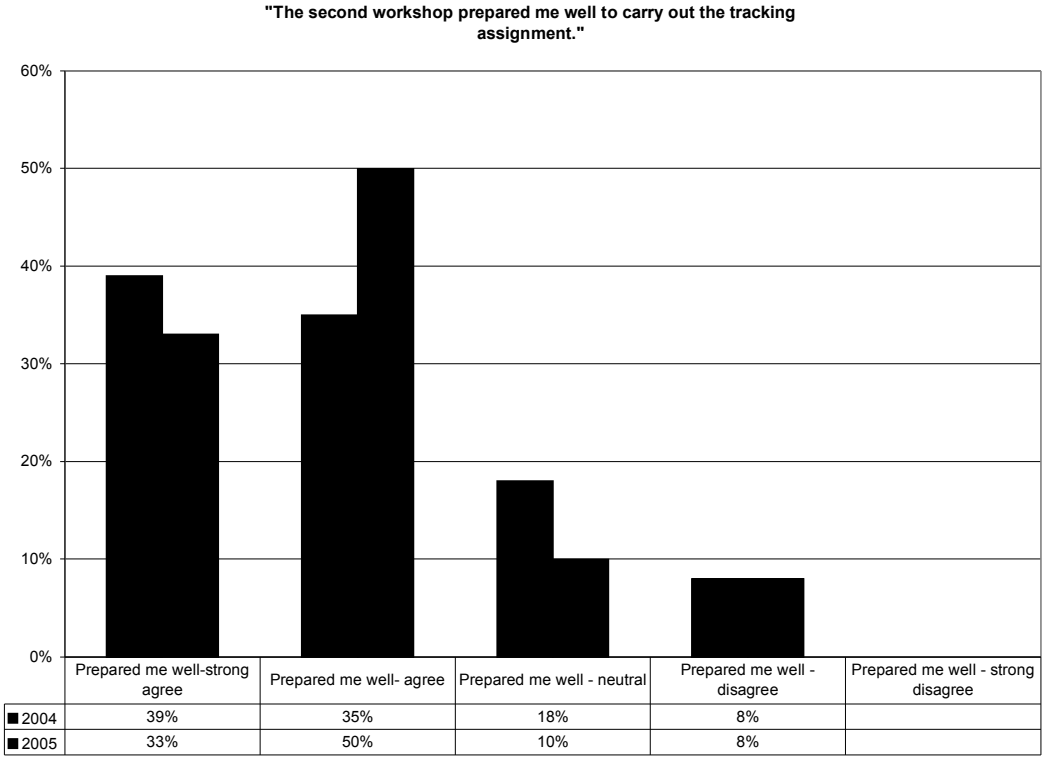


Figure 2

In order to fine tune the content of the workshops and to keep the focus on the most important information sources and strategies, the end-of-boot-camp evaluation asked specifically about students' use of the resources that were introduced in the workshops. The first evaluation in 2002 attempted to determine both whether the specific information resources introduced in the workshops were consulted for immediate assignments, and whether they were perceived as useful sources for future courses. The question was poorly structured and confusing to some students. For a particular resource, e.g. *LISA (Library & Information Science Abstracts)*, students had three choices to check: used; did not use; expect to use in the future. "Use" and "did not use" are mutually exclusive, while "expect to use in the future" may be checked in addition to either of the others. Some students, however, perceived their task as choosing just one of the three options, making the results of this question unreliable.

In subsequent years, the question was simplified to measure only whether students used the resources they were exposed to during workshops to complete their assignments. (See figure 3.) Overwhelmingly, they did use all the resources, but some variations in frequency of use appeared over the four year timeframe. Notably, reported use of the online catalog declined. This may be directly attributable to a decrease in instructional time devoted to the catalog. Most students today have considerable experience using online catalogs, and in fact, many LEEP students have studied or are working at one of the sixty-five other academic libraries in Illinois that form the Consortium of Academic and Research Libraries in Illinois (CARLI) and share the online catalog software Voyager from Endeavor. The fluctuating use of reserve materials is readily explained, because in 2004 only, students were given the option to purchase a printed course pack, and reserves usage dropped by half.

Starting in 2004, a sub-question was added, asking the student to "list other sources that you used." The most frequently mentioned sources were Lexis-Nexis and federal information sites like Thomas. Students found these sources quite useful for the tracking assignment. As a result, in 2005 the library workshop for the tracking assignment was revamped and government document librarians were invited to share their expertise during the session.

This question confirms that students are indeed using the resources they are taught, but it tells us nothing about the nature or extent of that use, nor whether the resource satisfied their information need. A new question is being devised that will ask students to rank the sources by their perceived usefulness, based on their experience. The answers should help to focus scarce instructional time and student attention on the most effective information sources in the future. However, tension will no doubt remain between teaching the sources that will serve students best in the short run -- that is, while they are enrolled in LIS 502 during boot camp –- and those that will benefit them as they continue through the master's program and into their careers.

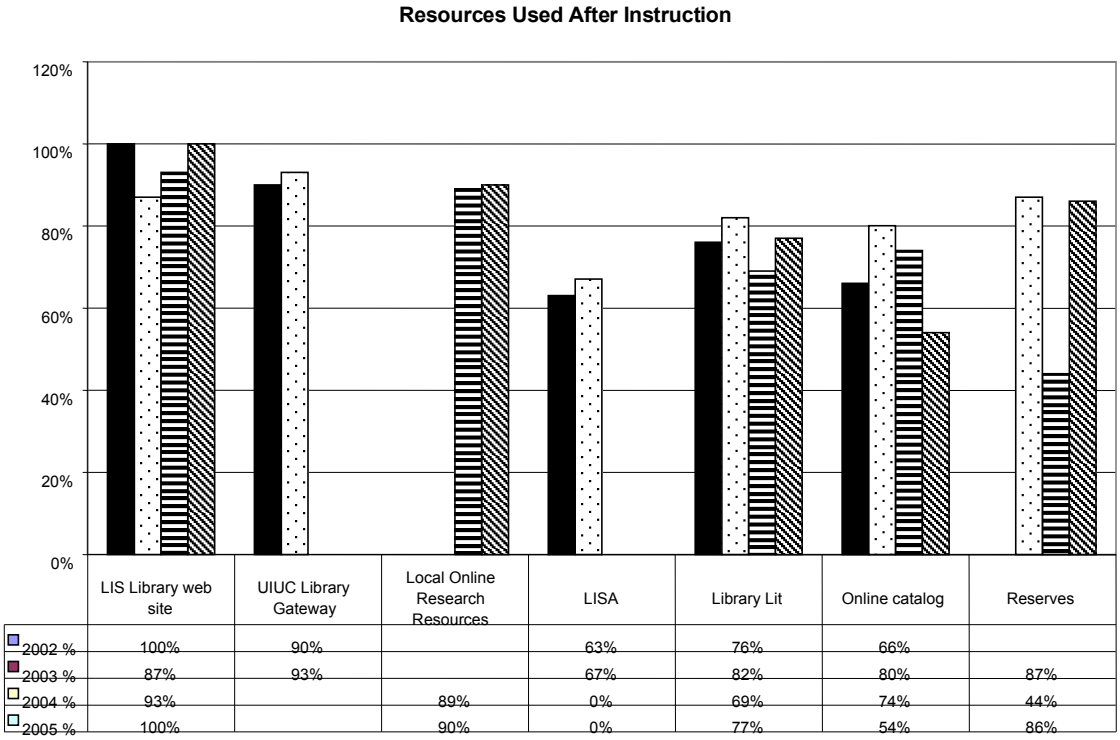


Figure 3

The culture of assessment within the LEEP program.

As noted in the literature review, LEEP has been studied and analyzed extensively from within by GSLIS faculty and doctoral students. In addition to scholarly research projects, a number of quality improvement mechanisms have evolved within the program. These include periodic conference calls for faculty, online alumni reunions, and an online guide for adjunct LEEP faculty. In addition, general web boards for all currently enrolled LEEP students and course-specific web boards enable prompt sharing of problems and solutions.

Because LEEP has been characterized from its beginnings by a strong focus on continuous assessment on many dimensions, the annual evaluation and tweaking of the

library's information literacy components seems natural and is of interest beyond the library. Further, sharing the results of the questionnaires with the instructors and appropriate administrators, while seeking feedback on ideas for improvement, puts the library in a positive light and positions it as a partner in the teaching activities of the School.

Although today's LEEP students do not see themselves as pioneers of online education, as the earliest cohorts did, they nonetheless tend to develop strong loyalties to the program. The final question on the evaluation form requests "suggestions for improving library orientation for future LEEPers" and many students make the effort to answer it. A number of the improvements spotlighted below were inspired by student suggestions.

Instructional Improvements Based on Evaluative Data

In each of the four years that it has been conducted (2002-2005) the survey has pinpointed areas for improvement. Whenever possible, changes have been implemented the following summer. Among the improvements made were:

- The addition of a workshop devoted to the tracking assignment
- The distribution of a folder with basic library information and workshop handouts, including a comparison chart of major LIS journal indexes
- The posting of workshop scripts, slides, and handouts on a web site for future reference. (This parallels the standard practice of archiving the audio, chat, and visual portions of synchronous online LEEP classes. Students expect to be able to access and review materials as needed at their later convenience.)

- The addition to the first workshop of a short introductory lecture, with slides, that contextualizes LIS literature within the discipline
- The inviting of another staff member to serve as a "floater" during workshops, in order to assist people who lose the thread of the content or whose computers malfunction.
- The addition of a live demonstration of chat reference
- The expansion of the library tour to include the central bookstacks

Students have used this final question to suggest varied approaches to accommodate different learning styles. Among the recommended enhancements are:

- *Provide a flowchart or other visual depiction of the literature research process in LIS.* This hasn't been done yet, due to concerns about over-simplifying a complex process.
- *Convert the workshops into an online tutorial, to either replace the in-person workshops or offer an easy method for review.* Several students created a good tutorial on finding peer-reviewed articles in LIS for a course in 2000, but it has not been updated. Time, expertise, and software are needed to accomplish this task. Meanwhile, the workshops stress the availability of tutorials for individual resources.
- *Skip the third workshop during boot camp. Instead, integrate it into LEEP during the fall semester, when students will actually need to obtain materials and help from a distance.* This suggestion recognizes that many students are exhausted by the final days of boot camp, and either skip the workshop or fail to absorb the

information presented. After completing boot camp, most new LEEP students take another required course in the fall, and the possibility of building further library instruction into that course should be explored. Again, this will require the development of online instructional resources, to be integrated into a live class session and/or made available for asynchronous consultation.

The strengths and weaknesses of the evaluation method

The end-of-boot-camp student evaluation form, despite its simplicity, has been a powerful tool for improving information literacy instruction within LEEP. As an assessment method it has several advantages. It is easy to capture data while the students are together on campus. The paper-and-pencil survey is easy to reproduce and to tally for the relatively small groups of participants. The scheduling of the final library workshop, in which the evaluation takes place, during the last days of boot camp provides a sense of closure for the students. They can assess the entire library instructional program, while the component experiences are fresh in their memory.

There are also disadvantages to this form of assessment. Student burn-out by the end of boot camp leads to attrition at the last workshop; thus the full population is not surveyed. Although exhaustion is usually cited as the reason for skipping the final workshop, some may opt out because the previous workshops were unsatisfactory in their view; thus the results of the evaluation may skew toward the positive. Even the students who do attend the workshop and complete the form often allude to being "brain dead" and too tired to think of proper answers. (Hence the suggestions for improving the workshops by allowing nap time and serving free coffee.). Perhaps the most glaring deficiency with this type of evaluation is that it comes too soon to genuinely measure whether the

instruction prepares students adequately for literature-based research tasks in their subsequent GSLIS courses.

In addition to its immediate utility as a tool for improving instruction, the evaluation process has several side benefits. For the students, it serves as an example of library service assessment—a simple, low-cost method that they can emulate in their future careers. By signaling that their opinion matters, the survey helps to cement their sense of belonging within LEEP. For the librarian, the administration of evaluation forms year after year fosters a long-term perspective on change and acceptance of the fact that tinkering with the content and delivery will (and should) never end. She can better respond to changes in student capabilities (e.g comfort with laptop computers) and preferences (e.g. to sell the library tour as a refreshing break from class and computer labs). Simply by asking students what they think, and by letting them know that their input can affect changes, the librarian portrays herself as a caring, involved professional, someone they can feel comfortable emailing or phoning with a reference question later.

The librarian is also perceived as an expert in her own domain by GSLIS faculty and administrators. Invitations to help plan the first campus online education retreat and to be involved in the planning for a new software platform for LEEP may have been forthcoming because the librarian's commitment to improved instruction is evident.

Finally, the assessment of the library component of boot camp benefits GSLIS and its faculty. It reminds them that the librarian is an active partner in educating students, facilitating their learning, and socializing them in the LEEP culture. Confidence in the librarian leads to further opportunities for course-integrated instruction on finding information in specialized areas, such as library administration and the design of library instruction.

Beyond Boot Camp: Evaluation as a Promotional Tool for Information Literacy in the Curriculum

By building the survey into the program as a regular component of LEEP orientation, the LIS Librarian created an annual opportunity to spotlight the contributions of information literacy instruction to student learning. By instituting small but meaningful changes to the workshops and tour every summer, the librarian, instructors, and LEEP planners interact as responsive and flexible colleagues. The LEEP program has a healthy culture of continuous assessment and experimentation, within which the library's assessment and improvement efforts fit well. One GSLIS professor remarked that by conducting regular evaluations, the LIS Librarian signals that she is "on the same page" as her colleagues on the teaching faculty.

Pedagogical and technological innovations in the LEEP program have encouraged similar innovation and adaptation in traditional on-campus courses. For example, many on-campus courses at GSLIS now utilize electronic bulletin boards and online syllabi. Librarian-led information literacy sessions are likewise in increasing demand for on-campus courses. In the fall of 2005, for the first time, the LIS Librarian was asked to make a substantial, one-half hour presentation during the orientation session for new on-campus students. (In earlier years, her role consisted merely of introducing herself.) Even more encouraging for student learning outcomes, she was invited to present information literacy instruction to students in the lab sections of a core course, LIS 501: Information Organization & Access. (LIS 501, offered every fall, and LIS 502, offered every spring and during boot camp, are the only required courses for GSLIS master's degree students. In LEEP, LIS 502 is the entry course for all students, while on campus, LIS 501 is the entry

course for about 120 new students who enroll in the fall semester. A much smaller group of new students arrive for spring semester, generally no more than thirty. For them, as for LEEP, LIS 502 serves as the entry course.) The increased awareness of, and therefore demand for, the LIS Library's specialized information literacy instruction is at least in part attributable to the "marketing" effect of the annually repeated assessment in LEEP.

The incorporation of information literacy instruction in the entry course for on-campus students in Fall 2005 is directly attributable to the success of the library workshops in LEEP. A former adjunct LEEP instructor, newly hired to the tenure-track faculty, was assigned to co-teach LIS 501. She was convinced of the value of librarian-led instruction within the course framework, based on her experience in LEEP. The course is organized as a large weekly lecture with six TA-led lab/discussion sections. The librarian was offered two 50-miniute slots with each lab section early in the semester and was asked to provide a grounding in the LIS literature and search strategies similar to that provided during boot camp. Some adjustments were made for the on-campus audience, but the general objectives and much of the curriculum for the workshops remained unchanged.

A very similar evaluation form was used to gauge how well the instructional model used with LEEP students translated to the on-campus setting. The results indicate that further refinements are needed to make the on-campus instruction as effective and appreciated as the LEEP boot camp workshops. For example, while a majority of both on-campus students and LEEP students agreed that the sessions covered just the right amount of information, on-campus students who disagreed tended strongly to feel that more should have been covered, while LEEP students who disagreed wanted less (Figure 4). Typical comments were:

"More needed on whole process—all the way from search to full-text download."

"They were great basic instruction, but I was already familiar with how to use databases to search for articles."

"Go through more examples and more techniques for advanced searching."

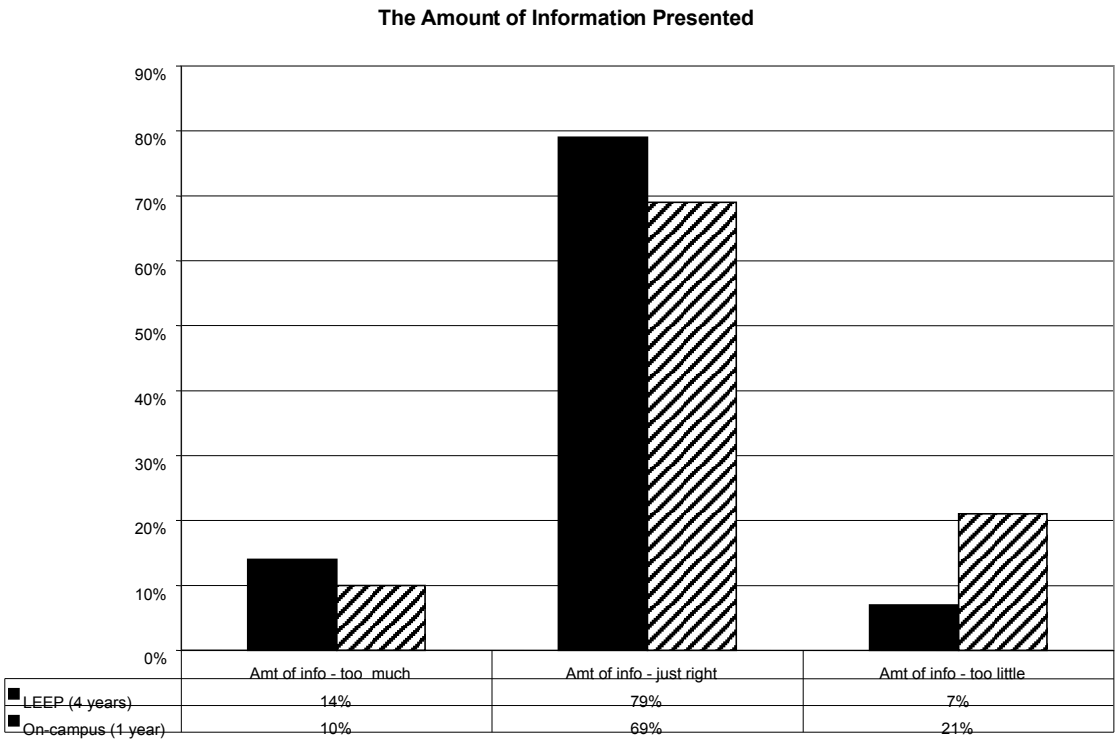


Figure 4

On the whole, on-campus students were less convinced of the value of the lab sessions (Figure 5). Judging by the comments, many students felt that the LIS 501 lab sessions were superfluous for those who had jobs in the library as graduate assistants and thus had recently completed the graduate assistant training modules in online searching:

"Session should be optional—lots of redundant info."

"For those who went through GA training already info was repetitive and not useful."

Students recommended several ways to deal with this reality in the future: make the lab sessions optional; provide a way to "test out" of them; focus the sessions more on advanced skills and resources; and combine the two lab sessions into one, delivered at a faster pace.

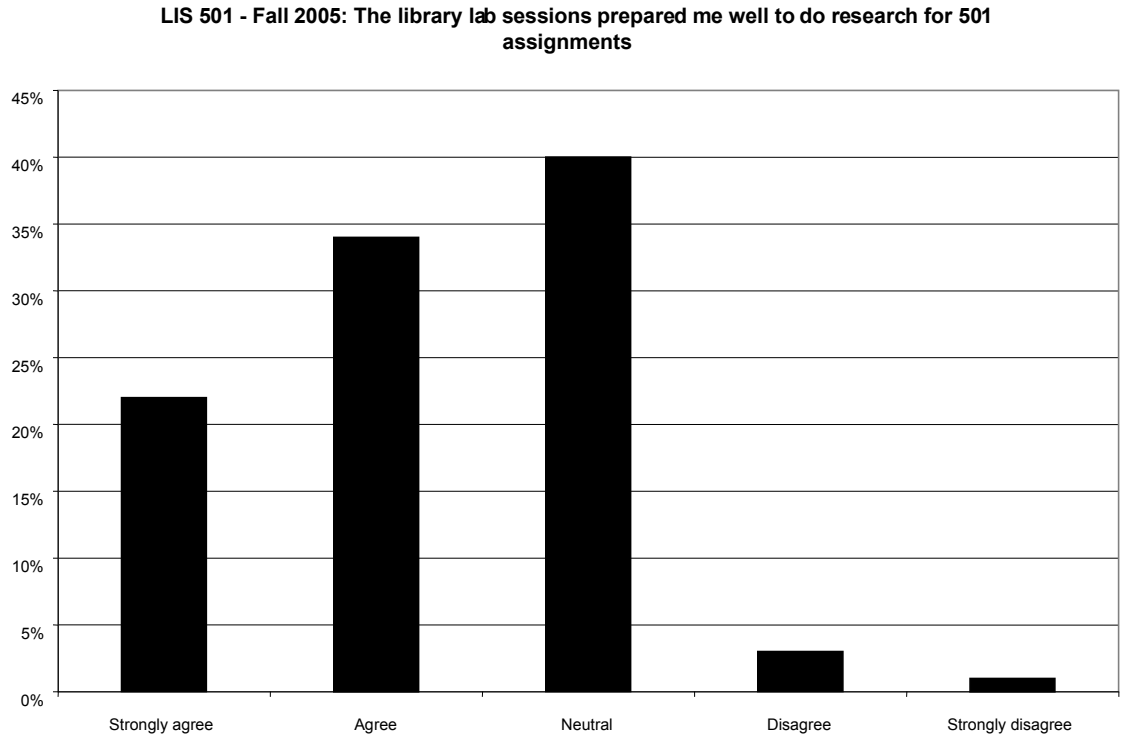


Figure 5

Future Possibilities

The findings from the student evaluations of information literacy instruction for incoming GSLIS students have justified incremental improvements in the content and organization of the sessions. To date no major restructuring of the information literacy program has been undertaken. However, the findings suggest that a very different approach might pay off. Both LEEP and on-campus students might appreciate learning the basics of literature searching in LIS from a web-based tutorial, particularly one that includes a quiz feature allowing knowledgeable students to test out. Such an approach

could partially compensate for the varying levels of information-seeking experience that incoming students possess. The limited time available for workshops and lab sessions could then focus on more advanced information retrieval skills, emerging information resources such as disciplinary online repositories, and/or citation management tools like RefWorks. Questions will be added to the evaluation form in Summer 2006 to solicit reactions to a redesign. The vision is of a single instructional program, customizable for students of varied knowledge levels, whether enrolled on-campus or in LEEP, and suitable for either entry course.

This vision may overly optimistic, but it is worth striving toward, because LEEP and on-campus students must be equally well prepared to seek and use LIS information. Outside of the two required courses, there is considerable blending of the LEEP and on-campus populations. Many on-campus students take courses in the LEEP format, simply because they fit their schedules best, or because a desired course will not be offered on-campus before the student expects to graduate. Students participating in the same class ought to come similarly prepared to complete literature-based assignments. In addition, recent research has also shown that on-campus and distant LIS students have similar learning styles (Brown-Syed et al., 2005), suggesting that a unified approach to information literacy instruction will benefit all.

At this writing, the underlying architecture of LEEP's computer-mediated components is under review. Although the current home-grown system has served well for many years, migration to a new software platform is inevitable. The next generation of LEEP technology may afford new opportunities for integrating library services, including instruction, more seamlessly into the online learning environment.

With more money, time, and expertise, a considerably more sophisticated assessment and continuous improvement regimen could be instituted. However, it is not clear that a greater investment of money and effort would garner significantly more or better knowledge than the current simple evaluation process. The key is what is done with the evaluative data. By sharing it with instructors and administrators, the information literacy program can continue to grow and develop in directions that meet everyone's needs.

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Appendix: Summer 2005 Evaluation Form.

LEEP 10.1 / 10.2, July 2005 -- Library Orientation and Workshops

****

1) The first library workshop introduced the Library Gateway and UIUC e-resources.

The first workshop prepared me to do research for 502 assignments.

Strongly agree Agree Neutral Disagree Strongly disagree

2) The following resources were covered in the first library workshop. Please indicate whether you used these resources to complete 502 assignments:

2a) UIUC Online Research Resources search page (yellow background)

___ Used ___ Did not use

2b) LIS Library web site

___ Used ___ Did not use

2c) Course reserves (print and/or electronic)

___ Used ___ Did not use

2d) Library Literature & Information Science Full Text (article database)

___ Used ___ Did not use

2e) Online library catalog

___ Used ___ Did not use

2f) List other sources that you used:

_____
_____
_____

3) Overall, the amount of information presented at the first library workshop was

___ Too much ___ Just the right amount ___ Too little

4) Comments about the first library workshop (including topics to add or delete):

_____
_____
_____

5) The library tour was:

___ Too long ___ Just right ___ Too short

6) Comments about the library tour (including topics or locations to add or delete):

_____
_____
_____

7) The second library workshop covered resources for the Tracking Assignment and directions for setting up alert services.

This workshop prepared me well to carry out the assignment.

Strongly agree Agree Neutral Disagree Strongly disagree

8) Comments about the second library workshop (including topics to add or delete):

_____
_____
_____

9) The third library workshop covered remote use of library e-resources, including netLibrary e-books, and using the Academic Outreach Library's services.

I feel confident about accessing UIUC library resources from home.

Strongly agree Agree Neutral Disagree Strongly disagree

10) Comments about the third library workshop (including topics to add or delete):

_____
_____
_____

11) Comments about library instructors:

_____
_____
_____

12) Suggestions for improving library orientation for future LEEPers:

THANK YOU!