

The Poster Session as a Vehicle for Teaching the Scholarly Communication Process

Merinda Kaye Hensley
University of Illinois at Urban-Champaign

Introduction

Teaching librarians will agree that information literacy concepts are best taught when students are invested in the outcomes of their learning. Student engagement can be demonstrated in many ways: a lesson that is directly tied to a course assignment, a one-shot session that incorporates student-driven activity, or a one-on-one teachable moment at the reference desk. For the past decade, efforts to improve the undergraduate experience have been taking place through the development of new curricular experiences including first-year seminars, writing-intensive courses, undergraduate research, global and service learning, capstone projects, and much more. These programs are a game changer for information literacy efforts, impacting the traditional ways librarians interact with students through the classroom experience and on the reference desk.

The curriculum changes in academia all have one aspect in common: they create an environment where the undergraduate student moves from being a consumer to being a creator of knowledge. Undergraduate students are increasingly contributing to the academic conversation by writing papers for their courses that are archived in the institutional repository and presenting their research results at conferences. In what ways should the librarian's approach to information literacy instruction adopt scholarly communication issues when the undergraduate student becomes the author?

Let us first consider two terms that are common in a librarian's vocabulary: *information literacy* and *scholarly communication*:

To be *information literate*, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information. (ALA 1989)

Scholarly communication is the system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community, and preserved for future use. (ALA 2003)

Librarians are intensifying efforts to influence developments around scholarly communication issues, and this advocacy is finding its way into the classroom. Warren and Duckett (2010) challenge librarians to consider undergraduates as a prime audience for discussing the economics of the publishing cycle:

A greater awareness of where information comes from and where it is accessible is important for not only developing the evaluative skills needed to find and make the best use of information, but also to understand the social nature of information and knowledge. Shaping this contextual understanding of information has allegedly always been an aspect of information literacy, but in practice it is frequently overshadowed by a skills-based approach that focuses on teaching students how to find, access, and evaluate information. (350)

Since 2007, the University of Illinois at Urbana-Champaign has been working with a one-of-a-kind undergraduate research program, the Ethnography of the University Initiative (EUI), to assist students with developing and presenting research posters and publishing them in the institutional repository, Illinois Digital Environment for Access to Learning and Scholarship (IDEALS).¹ Undergraduate research programs offer new opportunities for librarians to weave together their expertise in areas of student learning, information literacy, and scholarly communication. In fact, one could argue that the librarian's expertise is best positioned to lead support for the last phase of the research process—publication and dissemination of original undergraduate student work. This chapter will examine the role of the librarian in teaching the scholarly communication process, outline the relationship between a library and a formal undergraduate research program, detail how the poster session operates, and look ahead to how libraries can support expanding undergraduate research programs.

Creating High-Impact Learning Experiences throughout the Undergraduate Experience

Undergraduate research experiences continue to gain momentum across types of institution as well as by discipline. The Council on Undergraduate Research (CUR),² an organization that focuses on providing support through publications and outreach, defines undergraduate research as “an inquiry or investigation conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline” (CUR 2012a). Research universities, such as the University of Illinois, continue to emulate the progress of liberal arts and four-year private institutions in refining undergraduate education to provide discipline-oriented research programs, such as undergraduate research opportunities, that provide a strong foundation in inquiry-based learning (Boyer Commission 1998). Librarians’ efforts to expand the reach of information literacy have not gone unnoticed by the academy. The Association of American Colleges and Universities (AAC&U) includes information literacy in its outline of high-impact learning experiences,³ which includes formal undergraduate research. “The goal is to involve students with actively contested questions, empirical observation, cutting-edge technologies, and the sense of excitement that comes from working to answer important questions” (Kuh 2008, 10). These high-impact learning experiences also generate new opportunities and environments for teaching librarians to engage students beyond the one-shot instruction session.

Not to be confused with curriculum of the past (e.g., the stand-alone research paper assignment), undergraduate research programs invite students into faculty-led research by allowing them either to design a research project of their own or to be a partner within a faculty member’s research agenda. Students are mentored throughout the research process, including doing background research, gathering and organizing data, and contributing to the resulting scholarly output. Students benefit from exposure to the rigors of academia under the tutelage of a disciplinary expert, and the faculty member is enriched by the unobstructed and neophyte view of the student. Most significant, though, is that students publish and disseminate the results of their research in myriad ways: by publishing in undergraduate student journals, presenting at campus symposia and national conferences, creating research posters, and depositing their research in institutional repositories. Liberal arts and research institutions have been able to provide undergraduate research opportunities in the sciences by allocating resources for faculty to individually mentor undergraduate students as part of their research agendas and the goals of their departments. The social sciences and humanities have

followed the lead of the science disciplines in fostering scholarly engagement through experiential learning opportunities, including immersive fieldwork and experiments, and by exploring the growing field of digital humanities. The new curricular landscape provides experiential opportunities for the librarian to lead discussions that will assist students in understanding the publication process, intellectual property issues, and the significance of archiving collections of student research.

The Role of the Teaching Librarian

Today's undergraduate students are sharing exponentially more information than their predecessors, their extensive Web lives exposed through a social media deluge. We know very little, however, about their understanding of the authorship and publication process within academic digital scholarly production.⁴ Students are making decisions early in their academic careers that will influence how they capture and release information for the rest of their lives. When students participate in undergraduate research, they face new decisions regarding copyright, data management, open access (OA), authors' rights, and the creation of metadata for preservation purposes. The students' relationship to scholarly communication transforms from that of consumer to that of producer when they submit their research to an institutional repository or student journal or present at a conference. Librarians have the expertise to play an educative role throughout the process of publication, dissemination, and preservation.

Faculty may understand the value librarians bring to the classroom in teaching students how to locate, evaluate, and use information, but our narrative is only beginning to emerge on issues relating to the creation and curation of undergraduate student work. While discussion in the literature on the partnership between libraries and undergraduate research programs is scarce, Stamatoplos (2009) identified a new paradigm:

Though their needs can in many ways resemble those of faculty researchers, such students understandably might not always think like experienced scholars. The librarian becomes a critical ally in the research process and a welcome guide to a more sophisticated approach to scholarship. The librarian can make a significant contribution to what is an inquiry-based model of teaching and learning both at the campus level and throughout the research community. (240)

Working with students on scholarly communication issues as they pertain to undergraduate research strengthens the role of the librarian in the publishing and dissemination process, affirming Ogburn's (2011) compelling phrase, "Lifelong learning requires lifelong access" (515).

Ethnography of the University Initiative at the University of Illinois at Urbana-Champaign

Background

Celebrating its ten-year anniversary in 2013, the Ethnography of the University Initiative (EUI)⁵ is a collaborative program that engages students in ethnographic research about the University of Illinois at Urbana-Champaign community, including but not limited to the students' experiences in the community. Although based at the University of Illinois at Urbana-Champaign, EUI has explored multiple academic perspectives through courses at other universities, including University of Illinois at Chicago, Illinois State University, Parkland College, Ithaca College, and Syracuse University. EUI is, at its heart, a multidisciplinary endeavor, and while the number of courses affiliated with the program varies by semester, examples include agricultural and consumer economics, anthropology, Asian American studies, curriculum and instruction, educational organization and leadership, educational policy studies, kinesiology, natural resources and environmental sciences, rhetoric and composition, speech communication, and studio art. Each semester, EUI recruits faculty who teach established courses through the EUI structure. Courses taught as part of EUI operate in coordination with Institutional Review Board training and approval and library partnerships with the Student Life and Culture Archival Program (SLC), the University Library, and the institutional repository, IDEALS. Unlike undergraduate research programs in the sciences, where students are individually assigned to a faculty member, EUI courses form learning communities that are mentored together by the teaching faculty, the students' peers, and campus partners. From a student's perspective, core disciplinary concepts are taught by looking through an ethnographic or archival lens in order to gather qualitative or historical data around issues that most often resonate with the student's Illinois experience (e.g., campus safety, socialization, students with physical and learning disabilities, use of campus space). Student work culminates in the Bi-Annual Student Research Conference comprised of panel presentations, research posters, and most recently, multimedia presentations.

The University Library has been involved with EUI from its inception, although this relationship has matured over time. Library efforts

have included leading one-shot library instruction on searching skills, maintaining a bibliographic list of publications about the University of Illinois, and membership on the EUI Internal Advisory Board.⁶ While there are several subject specialist librarians that serve EUI, there is one over-arching library liaison that coordinates efforts across the Library. The SLC serves as a museum of university activities, collecting and archiving documents and artifacts that shine light on “student involvement in fraternities, sororities, student government, religious associations, publications, social events, athletics, and other activities that contribute to the total student experience in higher education” (SLC 2012). Each semester, the SLC invites students to learn how an archive is different from a library and how archival materials are stored and organized, and to explore the plethora of primary source materials related to the lives of past University of Illinois students. When the experience of archival research is interconnected with searching the institutional repository, a living history is formed that tells a story about the university and its culture throughout time:

Students often pass through universities with little knowledge of the histories, mandates, regulations, economies, or values that have structured university organization and practices. Even a brief foray in the archives helps students to see the university as an evolving institution and to appreciate the historical specificity of their own inquiries. (Hunter et al. 2008, 43)

An established collection in the institutional repository presents new opportunities for publishing undergraduate student research. Instead of repeatedly asking the same questions from semester to semester, faculty members are able to encourage students to build on previous students’ work by searching IDEALS during the formulation of their research questions. To date, over 600 student projects have been archived in IDEALS. Examples include studies of language barriers for the international campus community; ethics of animal care at the College of Veterinary Medicine; examination of social cultures across campus; investigation of the campus controversy about the retirement of a campus mascot; the freshman experience in dorms, cafeterias, and PanHellenic life; and much more.⁷

EUI is an example of the type of undergraduate research program in the social sciences and humanities described in the Boyer report: “The focal point of the first year should be a small seminar taught by experienced faculty. The seminar should deal with topics that will stimulate and open intellectual horizons and allow opportunities for learning by inquiry in a collaborative environment” (Boyer Commission 1998, 28). The University Library is a facilitator of student learn-

ing by virtue of its instructional mission, archives, student collections, and service ethos. Incorporating a student research poster session elevates the library's commitment to information literacy and scholarly communication by fostering inquiry at the undergraduate level through the publication of original student work.

An Example of EUI Student Work

While the scope of EUI's projects are too diverse and numerous to share within this narrative, a recent example serves to demonstrate the library's essential role. Students in a fall 2010 course Kinesiology/Sociology 249: Sport and Modern Society (instructor: Synthia Sydnor)⁸ examined the educational evolution of female faculty and their role in the history of athletics and sports scholarship. Eight student groups were each asked to examine the contribution and impact of an assigned female professor to today's University of Illinois kinesiology department. The students combined archival and ethnographic research to chronicle the faculty members' activities. Specifically, the students researched faculty papers in the University Archives and conducted ethnographic research through interviews with current professors, as well as students and family members who could speak to the intellectual life of the assigned faculty member. Toward the end of the semester, the liaison librarian taught an in-class session on how to create an effective research poster from the primary source material and qualitative data collected. At the end of the semester, each group presented its research as a poster at the EUI Bi-Annual Student Research Conference.⁹

Benefits from the EUI program for students include the opportunity to collaborate with faculty in the research and discovery process, contribute to the dialogue of a community of scholars, and gain presentation experience at the student conference. Students learn to do primary source and archival research, they collect and manage qualitative and quantitative data, and sometimes their research is used to provide feedback to the university on student issues. Because EUI frequently tackles controversial and challenging topics, students who identify with specific communities (e.g., international students, LGBT students, students of color) lend a unique voice to strengthening undergraduate retention,¹⁰ which simultaneously lays the groundwork to improve students' confidence in applying to graduate school. Faculty benefit from seminars that explore student intellectual property rights and the pedagogical practices around ethnographic and archival research (EUI 2012a). Perhaps most interesting, reciprocal learning provides faculty members with a fresh look at the academy through the experiences of their students. And finally, EUI presents a new avenue for re-envisioning information literacy instruction by teaching the life cycle of scholarly communication.

The Evolving Role of the Library: Research Posters

As we have seen, the University Library works with EUI during several phases of the research process. The primary library liaison works with EUI to provide general library and poster development instruction. The University Archives and the SLC Archival Program work with courses to teach primary sources and strategies for performing archival research. The coordinator of IDEALS works with the EUI co-directors and program coordinator to create metadata and manage uploads of student projects to the institutional repository. These relationships support the liaison librarian's goal of engaging students in discussions around intellectual property, research, and publication.

Bi-Annual Student Research Conference

In 2006, EUI's Bi-Annual Student Research Conference consisted of a series of student-led panels. Although student participation was voluntary, teaching faculty strongly encouraged or mandated attendance at the conference. Students must apply to participate in the conference, and while no student has ever been denied an opportunity to present his or her work, many more students supported their peers by being in the audience rather than choosing to present. Panels were grouped by topic, and students were given up to five minutes to present their semester-long research, oftentimes with presentation slides. After each student had a chance to present his or her work, the audience was encouraged to ask questions of the panelists. Although the campus community is customarily invited, the majority of the audience consisted of peers, friends, teaching faculty, EUI coordinators, and librarians. When asked why they chose not to present at the conference, students indicated hesitation to participate because of the mystery of what a student conference entailed. Anxiety about public speaking and the ambiguity over what questions might be asked as a panel presenter overpowered any desire to share their research. The liaison librarian identified a new opportunity: a poster session would address the students' concerns while expanding the content of the conference by including students who wouldn't have otherwise taken part in the event.

In the sciences, poster sessions have been common at conferences for many years, and more recently poster sessions have been gaining momentum across disciplines, including the social sciences and the humanities. Posters provide the opportunity to break down research into core elements: an abstract, detailed methodology, visual presentation of data, and discussion of results. They also allow for informal conversation between the researcher and his or her audience. The liaison librarian proposed the idea of a poster session to the coordinators of

the EUI program as a way to further engage students in the conference process, as well as an opportunity to teach scholarly communication concepts. The poster session was piloted in spring 2007 and became a feature of the student conference the following fall semester.

Why is a poster session an effective addition to a student conference? Poster sessions can be framed as a first step into the world of research dissemination while challenging students to think about how they are going to clearly and succinctly convey ideas and conclusions from their research. First, students must determine how to present quantitative and qualitative research data in a visual manner that balances aesthetics and information. Second, the opportunity to present a poster appeals to the learning strategies of those who would rather interact on a personal basis than risk facing a group; the amateur researcher is exposed to discourse in a safer environment than at the front of a room full of faculty and peers. And finally, the poster session is an exercise in professional development, allowing students to hone skills that will prove beneficial in graduate school or a professional job.

From the liaison librarian's perspective, the benefits of working with students on creating research posters drives progress toward meeting Standard Five of the *Information Literacy Competency Standards for Higher Education*: "The information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally" (ACRL 2000). First, undergraduate students engaged in formal undergraduate research programs have the opportunity to create new information. As part of that creation, students as authors must consider the ethical and legal ramifications of archiving their work in the institutional repository. Second, librarians are best situated to lead a conversation about the publication process by highlighting topics such as copyright, intellectual property issues, OA, and the significance of archiving collections of student work. Ultimately, these elements are woven into an instruction session about how to design a research poster while considering issues focused on the larger scholarly communication process.

Organizing the Poster Session

At the beginning of each semester, the liaison librarian is introduced to the teaching faculty as part of a larger orientation session that discusses the Institutional Review Board and ethical research standards specific to the structure of EUI, including best practices for using course management software, use of technology by student researchers, and strategies for undertaking archival research. Since the structure of

EUI does not require classes to participate in the student conference at the end of the semester, the orientation provides the liaison librarian a chance to promote the poster session while teaching faculty are still planning the semester. Increasingly over the past five years, the library's participation in the orientation has made a visible impact; faculty are choosing to encourage student participation in the conference and have promoted the poster session to their students in a variety of ways: as a mandatory assignment, for extra credit, or as a professional development opportunity. However, as part of the EUI structure, faculty members are required to donate class time throughout the semester for guest speakers in order to facilitate ethnographic and archival research (e.g., Institutional Review Board, the EUI coordinator). With tight schedules and significant course content to be covered, not every course is able to extend an invitation to the library liaison to teach students during class time about developing a poster. Getting into the classroom to teach the students about the poster session is the single largest challenge for this library initiative.

Teaching Posters

The pedagogical strategy for EUI courses focuses on inquiry-based learning, a form of active learning that aligns well with presenting a research poster. Inquiry learning is not about how much knowledge transfer can happen over the course of the semester; rather, it emphasizes the processes around student-driven questions and making meaning from the resulting research and observations. First, posters provide the opportunity for students (as knowledge producers) to contextualize and explain what they have learned. Second, the poster session creates a learning environment in which there is distributed knowledge sharing among the attendees. Each presenter and attendee brings his or her experience and knowledge to the conversation, giving the presenter a broader perspective on the research and oftentimes leaving the presenter with new questions. Teaching students how to develop a research poster provides an entry to the classroom to forge deeper relationships with budding researchers and the teaching faculty (who may also have questions about scholarly communication issues but are hesitant to ask).

The lesson plan for teaching research poster design is threefold: instruction in how to develop and design a compelling research poster, instruction in how to work effectively with data visualization tools, and an overview of scholarly communication issues. The lesson plan is taught in a fifty-minute session but can be condensed to thirty minutes with support from the corresponding online guide.¹¹

The liaison librarian begins the session by asking students if they have previously presented or attended a poster session. Frequently,

no one in the room has presented a poster but one or two are willing to share their impressions of attending a poster session, usually the campus student research symposium held each spring. Next, during a slide show of past EUI posters, students are asked, “What elements do or do not work for this poster?” “Does the visualization of this data tell a story?” “What would you do differently?” The liaison librarian also brings a physical poster to the library instruction session so that students can begin to envision how their research will translate into a poster presentation.

There are three elements students are asked to consider before designing a poster:

1. What information should be covered verbally in a lightning talk (1–2 minutes)?
2. What information is best shared visually on the poster?
3. What information should be conveyed through a handout?

The three elements should complement one another. When selecting which content is appropriate for each element, the librarian encourages students to tell a story, constructing a narrative that brings their research alive for the audience. The lightning talk should bring context to the visual information presented in the poster. Handout information should include complex background information, possibly a written abstract, more detailed results, references cited, and links to online portfolios.

The next section of the lesson plan, best practices for poster design, is covered only briefly, relying upon the more detailed information in the online guide. The liaison librarian outlines poster specifications using Microsoft PowerPoint, and although there are myriad software programs that can be used to create a poster including the use of institutional templates, most students prefer to start with software with which they are already comfortable.

Parallel to the *Information Literacy Competency Standards*, the *ACRL Visual Literacy Competency Standards for Higher Education* provide a framework for teaching students about visual literacy.¹² In order to develop an effective research poster, students must be able to choose, evaluate, and create visual images that concisely convey the talking points of their research.¹³ Students may use a combination of visual images or create graphic representations from their data. The librarian demonstrates examples from past EUI posters, including use of charts, tables, graphs, tag clouds, infographics, and photographs, in order to spark inspiration. Visualization of data is a complicated topic, and most students have not gathered all of their data, usually qualitative ethnographic interview data, by the time of the library instruction. While the visualization of ethnographic data can be challenging for an experienced researcher,¹⁴ one of the goals of the EUI curriculum is

to expose students to the many aspects of data management. Visualization techniques help to tell a story and break up text-heavy poster presentations. Given the limited time available for library instruction, students are directed to an open library workshop on data visualization.¹⁵ Students can also make appointments with the subject specialist librarian who specializes in data visualization or with the liaison librarian for personalized assistance.

The University Library has allocated funds each semester as an investment in undergraduate research so that students can present a professionally printed poster at the student conference. Since the printing budget is limited, the first twenty-five students to send an e-mail to the liaison librarian with their tentative poster title are allocated free printing. Others who would like to present a poster may pay for printing on their own, or their department may choose to cover the cost. The e-mail establishes a working relationship between the student and the liaison librarian. Over the following weeks, the liaison librarian communicates with the entire group, highlighting best practices and reminding students of deadlines. Oftentimes, students will set up individual consultation time to talk through their poster development. The liaison librarian makes suggestions for content, visualization, and design and reviews each poster for mechanical details, including spelling and grammar. When the liaison librarian works with a student over the course of a semester, she can reinforce her role in the research process in ways that one-shot sessions and chance encounters do not.

For most undergraduate EUI students, this is their first experience from being an information consumer to being a knowledge producer. While EUI would like to see all the student posters archived, submissions are voluntary, and not all students initially understand the value of submitting their posters to the institutional repository. During the instruction session, the liaison librarian shows the EUI online community and briefly discusses the benefits for the students: contributing to a knowledge base about their university, providing future students a record of past research, influencing the generation of future research questions, a permanent URL that can be used on a résumé, and positive online presence in search engines.

Finally, information about the University Library Student Poster Award is briefly addressed, including the rubric that is used for selecting the award winners. Students are reminded that they need to show effective visual elements of their research, demonstrate use of library resources, and properly cite all of their sources (usually through a handout). Students are also shown how to cite their poster presentation on their résumé, further emphasizing the professional nature of the conference.

There are myriad advantages for the library in teaching students how to design a research poster. First, it gives the librarian a chance to

advocate for the role that teaching librarians can play in the research, publication, and dissemination process. Second, the librarian can discuss scholarly communication issues in the context of faculty curriculum goals. Third, conversation can begin to focus on copyright concerns for the student as author, an increasingly essential understanding whether a student chooses a path in the public or private sector. Fourth, the library can promote use of the institutional repository to future researchers, professionals, and current faculty as an archive as well as a resource.

Poster Printing

As anyone who has ever had a poster professionally printed knows, it is very expensive, and this is especially true on a student's budget. Nevertheless, seeing a colorful, professionally printed research poster on an easel is rewarding, and it cements the experience of what it means to be an author and experienced researcher. The University Library does not currently offer large-format printing to students and faculty, so the library negotiated with a local printing company to secure a discounted rate based on bulk printing. The posters are uniform in size (40 inches high by 30 inches wide) and printed in color on lightweight (60#) paper. The library administration's allocated fund pays for twenty-five posters to be printed each semester. The library also invested in standing easels, cardboard backings, and small binder clips to secure each poster. Students are encouraged to keep their posters after the conference.

University Library Student Poster Award

Since the fall 2009 semester, two students have been recognized with an University Library Student Poster Award, oftentimes including an additional honorable mention. The two top awardees are given a \$25 campus bookstore gift card,¹⁶ funded by the University Library and EUI. The awards are selected by the liaison librarian and the SLC Librarian or a member of the University Library User Education Committee, with input from the EUI directors and coordinator. The liaison librarian collaborated with the committee to draft and approve a rubric for the award.

The rubric evaluates three main elements for the posters: visual literacy, demonstration of use of library resources, and proper attribution and citation formatting. Within the subcomponents of the rubric, each poster is rated on a three-point scale (3 = exceeds, 2 = meets, 1 = does not meet) for each element. Visual literacy is examined by considering, "How did the student communicate their research through

the use of visuals? (e.g., graphs, charts, infographics, tag clouds, photography).” Librarians look for evidence of use of library resources by asking the question, “Did the student use the archives, electronic resources, books in the collection, etc.?” And finally, the librarians look for proper citation management by asking, “Did the student use a single, consistent citation style? Did the student properly cite sources including images?”

At the Conference

The EUI Bi-Annual Student Research Conference is typically scheduled two weeks before the end of the semester and runs for five hours into the evening. Students arrive dressed in business-casual attire, with handouts ready, and excited to see their posters and talk about their work. The posters are scheduled between panel sessions; during one of the poster sessions, the EUI supplies pizza and drinks for attendees. The poster sessions are scheduled for thirty-five minutes, but conversations are often in full force at the hour mark. One of the liaison librarian’s favorite inquiries is, “If you could continue this research next semester, what new questions would you ask?”

The implementation of the poster session has led to unexpected outcomes. The close quarters of the posters often leads to serendipitous exchanges between presenters. During a past conference, two students from separate classes, placed next to each other, had carried out similar research on dorm life. Before the poster session even started, the students held an intense discussion about their findings, to the delight of other presenters and attendees. It was a spontaneous exchange of ideas and an example of how inquiry-based learning allows students to engage in reciprocal critical thinking. Anecdotally, several teaching faculty members have shared with the liaison librarian that the process of creating posters has led to improved final papers; students were asked challenging questions during the poster session, which often-times led their final conclusions in a more reflective direction.

The development of research posters demonstrates oral and written work and provides an opportunity for critique of student work, a valuable element in thoughtful and progressive undergraduate education. The Boyer report emphasizes, “Dissemination of results is an essential and integral part of the research process, which means that training in research cannot be considered complete without training in effective communication” (Boyer Commission 1998, 32).

Archiving Student Work

While capturing student knowledge contributes to the larger EUI mis-

sion of examining the university over time, publishing original student research in the institutional repository also initiates an opportunity for creators of knowledge to curate their own collection. Students are brought into the world of information organization by participating in the process of choosing what to preserve, considering issues related to intellectual property, and generating the metadata attached to their materials. In working with the faculty supervisor, the liaison librarian and the IDEALS coordinator to archive their work, students learn to systematically catalog not only their research but also their larger online lives.

Approximately 50 percent of EUI projects have been preserved in the institutional repository since 2005. As of mid-October 2012, projects from the EUI community have been downloaded 247,808 times (EUI 2012b). There are eleven defined collections, including Diversity on Campus/Equity and Access, Globalization and the University, Student Communities and Cultures, Technology and Student Life, and University Units and Institutional Transformation. The project that has been downloaded most frequently (20,846 times) is titled, *UIUC Women's Crew: Origins, History, and Progress*.¹⁷

As part of the EUI process, students are given the option of signing an agreement for submitting their work to the institutional repository (IDEALS 2006). This is usually a student's first experience in navigating authors' rights and OA, providing an ideal opportunity to talk with students about intellectual property rights. The IDEALS coordinator worked closely with the EUI coordinator to draft the agreement that must be signed in order to deposit student work in the institutional repository. There is a train-the-trainer program in place where the EUI coordinator, with advice from the IDEALS coordinator, works with teaching faculty to emphasize talking points regarding intellectual property issues that need to be clarified for students. "Asking students to consider if and how they want their own work to be shared and used by others shifts the nature of discussions from cautionary and reactive to reflective and proactive, and explicitly acknowledges that the students' work is valued enough to be shared if they choose" (Davis-Kahl 2012, 213).

A wide variety of student materials are preserved in IDEALS: research proposals, annotated bibliographies, robust course management pages that include anonymized student discussions, interview and survey instruments, data in all forms, research process essays, final papers, slide presentations, posters, and media projects including podcasts and video.

The EUI staff, in collaboration with the IDEALS coordinator, creates metadata for the entire collection. Subject headings are provided to conform within the EUI community, and students are given the oppor-

tunity to provide abstract and keywords. Due to the open nature of the IDEALS platform, all records are indexed by online search engines and therefore findable by anyone with an Internet connection. Item records include the research question, instrument, methodologies, analysis of data, and in some cases, the raw research data (Shreeves 2009). Students must de-identify any research subjects, which means they anonymize their data, before it can be included in IDEALS. The teaching faculty and the EUI coordinator are responsible for ensuring that this has happened, and it provides an opportunity to talk further about data management issues. Submissions are not peer-reviewed, and all student work is accepted into the archive, although some students choose to anonymize or embargo their submissions given the controversial nature of the topics covered in the EUI courses. All coursework affiliated with EUI is identified as such in the item description so as not to confuse undergraduate student work with peer-reviewed faculty publications.¹⁸ And most important, students retain copyright over their work.

The value of preserving original undergraduate student research includes these advantages:

- Future students, at Illinois and beyond, are able to find research on the same or similar topics.
- Past student work can be a starting point for current research topics and provide background information.
- Students can see how different research methods are used across parallel topics.
- Students are better able to differentiate their work from previous projects (Shreeves 2009).

When the archived student work is combined with primary resources from the Student Life and Culture Archival Program and the University Archives, EUI students are able to paint a more colorful, complex, and thoughtful picture of the Illinois community experience.¹⁹

Looking Ahead to Support Expanding Undergraduate Research Programs

Not surprisingly, new ideas have emanated from the original poster session as conceived five years ago. One semester, two undergraduate rhetoric professors teamed together, required each student to design a poster, and held their own conference of virtual posters presented on a projection screen. The faculty members were able to see the value of data visualization and presenting student research even if the conference was unable to accommodate the entirety of both classes.

As part of the move to facilitate multimedia student projects, the EUI program recently secured campus grant money to purchase tech-

nology for creating video and podcast projects. In partnership with the Undergraduate Library, this development parallels a new University Library initiative to build a media commons. The media commons recently hired a coordinator and will be located in the Undergraduate Library, which will provide space, furniture, and technology in support of multimedia production. In-house technology will include new hardware, software, media-viewing stations, collaboration rooms, a green screen, mobile whiteboards and screens, huddle boards with cameras, and loanable technology. The multimedia projects are also being archived in the institutional repository.²⁰

Another opportunity for the library comes with the implementation of a student research symposium for the spring semester through the campus rhetoric program. The liaison librarian has provided similar library instruction similar to that given to poster presenters at the EUI student research conference.²¹ The next stage for this program is to partner with the IDEALS coordinator in order to archive the posters, and possibly video of the presentations.

The University of Illinois at Urbana-Champaign is seeing an increase in disciplinary student research conferences, and the liaison librarian has been invited to teach about posters in the applied health sciences and the mechanical engineering departments. And finally, the campus is preparing to centralize support for formal undergraduate research. An inaugural director for the new Office of Undergraduate Research has been recently appointed.

“Traditional” undergraduate research initiatives can be difficult to implement at large research universities; there simply are not enough faculty mentors to work with students one-on-one across disciplines. At Illinois, EUI is a model program that builds an undergraduate research experience into an interdisciplinary course structure of learning communities. It is reasonable to expect that research institutions will continue to find creative ways to implement undergraduate research programs. The instructional mission of the library must also expand to reflect undergraduate students’ movement from being information consumers to being knowledge creators and curators.

Conclusion

Formal undergraduate research programs have potential to stimulate original thought and conversation between students and within their academic disciplines. As the directors of EUI remind us, “Universities have increasingly recognized the importance of engaging students in active learning, relating that learning to students’ lived experiences, and helping them recognize that they are creators of knowledge rather than mere recipients of learned truths” (Hunter et al. 2008, 42).

The library supports the value of undergraduate authorship through information literacy and scholarly communication instruction efforts, archival and online collections, and its service commitment to publish, disseminate, and preserve original student work.

Undergraduate students are scholars-in-training, and their roles as authors will undoubtedly impact the questions that are being asked in scholarship. It may be the librarian's hope that this impact be felt in the overall scholarly communication process for it is future authors who will use their knowledge of the scholarly communication process to advocate for a more open system of information sharing. In order for those hopes to be realized, the responsibility lies with the teaching librarian to examine our praxis in the campus classroom in order to nurture students as authors.

There is a paradigmatic shift on the horizon in the way librarians think about our mission in the classroom. In collaborating with formal undergraduate research programs, teaching librarians can provide a learning environment that is ripe for working with scholarly communication issues in all forms.

Acknowledgments

The author would like to thank the Ethnography of the University Initiative for enthusiastically teaming with the University Library to offer the poster session as part of the Bi-Annual Student Research Conference. This chapter was originally conceived as a poster at the Annual American Library Association Meeting in Anaheim, California, on June 24, 2012. <http://hdl.handle.net/2142/34762>.

Notes

1. The IDEALS website is at <https://www.ideals.illinois.edu>.
2. The CUR website is at <http://cur.org>.
3. Kuh (2008) argues that ideally students would have access to one high-impact experience per year. High-impact learning experiences include first-year seminars and experiences, common intellectual experiences, learning communities, writing-intensive courses, collaborative assignments and projects, undergraduate research, diversity and global learning, service and community-based learning, internships, and capstone courses and projects.
4. This idea was explored in an unfunded Institute of Museum and Library Services (IMLS) grant.
5. The EUI website is at <http://www.eui.illinois.edu>.

6. Members of the Internal Advisory Board are listed at <http://www.eui.illinois.edu/people/internal>.
7. IDEALS has a community dedicated to EUI, which can be explored here: <https://www.ideals.illinois.edu/handle/2142/755>.
8. For a more complete description of the project, see <http://ahs.illinois.edu/untoldstory.aspx>.
9. As a result of the collaboration, the librarian was invited to be a member of an advisory board, “Untold Story” Provost’s Gender Equity Grant.
10. The Council on Undergraduate Research states that undergraduate research programs increase retention (see CUR 2012b), and the directors of EUI also cite anecdotal evidence from conversations with students in which they have discussed retention and applications to graduate school.
11. The online guide, “Preparing a Research Poster for the EUI Student Conference,” is at <http://uiuc.libguides.com/poster>.
12. According to the document’s definition of visual literacy, “Visual literacy is a set of abilities that enables an individual to effectively find, interpret, evaluate, use, and create images and visual media. Visual literacy skills equip a learner to understand and analyze the contextual, cultural, ethical, aesthetic, intellectual, and technical components involved in the production and use of visual materials. A visually literate individual is both a critical consumer of visual media and a competent contributor to a body of shared knowledge and culture” (ACRL 2011).
13. To help students find and evaluate images, the librarian refers to student to an online guide, “Finding and Using Images,” at <http://uiuc.libguides.com/images>.
14. For some interesting ideas on visualization of data, see Lengler and Eppler 2007, Chapman 2009, and Friedman 2007.
15. For more information about the Savvy Researcher workshop series, visit <http://illinois.edu/calendar/list/4068>.
16. One semester, the poster award was given to a group. The librarian worried needlessly about how the students would split a \$25 award—they decided to purchase snacks with the gift card and share them during class time.
17. To see a current statistics report, see “Top Downloads for Ethnography of the University Initiative,” <https://www.ideals.illinois>.

edu/handle/2142/755/report.

18. This text is placed on every EUI submission in IDEALS: “Note: This is a student project from a course affiliated with the Ethnography of the University Initiative. EUI supports faculty development of courses in which students conduct original research on their university, and encourages students to think about colleges and universities in relation to their communities and within larger national and global contexts.”
19. See “Student Research Projects” at <http://www.eui.illinois.edu/student/multimedia/AnUntoldStoryVirtualExhibit.aspx>.
20. See “Multimedia Projects —Ethnography of the University Initiative” at <https://www.ideals.illinois.edu/handle/2142/30631>.
21. Unfortunately, the University Library cannot afford to fund the printing of posters for the growing number of student poster sessions campus-wide and as part of the disciplines.

References

- ACRL (Association of College and Research Libraries). 2000. *Information Literacy Competency Standards for Higher Education*. Chicago: ACRL, January 18. <http://www.ala.org/acrl/standards/informationliteracycompetency>.
- . 2011. *ACRL Visual Literacy Competency Standards for Higher Education*. Chicago: ACRL, October. <http://www.ala.org/acrl/standards/visualliteracy>.
- ALA (American Library Association). 1989. “Presidential Committee on Information Literacy: Final Report.” American Library Association. January 10. <http://www.ala.org/acrl/publications/whitepapers/presidential>.
- . 2003. “Principles and Strategies for the Reform of Scholarly Communication 1.” American Library Association. June 24. <http://www.ala.org/acrl/publications/whitepapers/principlesstrategies>.
- Boyer Commission on Educating Undergraduates in the Research University. 1998. *Reinventing Undergraduate Education: A Blueprint for America’s Research Universities*. Stony Brook: State University of New York–Stony Brook. http://www.niu.edu/engagedlearning/research/pdfs/Boyer_Report.pdf.
- Chapman, Cameron. 2009. “50 Great Examples of Data Visualization.” Webdesigner Depot. June 1. <http://www.webdesignerdepot.com/2009/06/50-great-examples-of-data-visualization>.
- CUR (Council on Undergraduate Research). 2012a. “About CUR.” Accessed December 6. http://www.cur.org/about_cur.
- . 2012b. “Fact Sheet.” Accessed December 6. http://www.cur.org/about_

cur/fact_sheet.

- Davis-Kahl, Stephanie. 2012. "Engaging Undergraduates in Scholarly Communication: Outreach, Education and Advocacy." *College & Research Libraries News* 73, no. 4 (April): 212–222. <http://crln.acrl.org/content/73/4/212.full>.
- EUI (Ethnography of the University Initiative). 2012a. "Quick Facts." Accessed December 7. <http://www.eui.illinois.edu/about/facts>.
- . 2012b. "Total Downloads." Accessed October 20. <https://www.ideals.uiuc.edu/handle/2142/755>.
- Friedman, Vitaly. 2007. "Data Visualization: Modern Approaches." *Smashing Magazine*. August 2. <http://www.smashingmagazine.com/2007/08/02/data-visualization-modern-approaches>.
- Hunter, Gina, Nancy Abelmann, Timothy Reese Cain, Tim McDonough, and Catherine Prendergast. 2008. "Interrogating the University, One Archival Entry at a Time." *Change: The Magazine of Higher Learning* 40, no. 5: 40–45.
- IDEALS (Illinois Digital Environment for Access to Learning and Scholarship). 2006. "IDEALS Deposit Agreement: Non-Exclusive Distribution and Preservation License." April. <https://services.ideals.illinois.edu/wiki/bin/view/IDEALS/DepositAgreement>.
- Kuh, George D. 2008. *High-Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter*. Washington, DC: Association of American Colleges and Universities.
- Lengler, Ralph, and Martin J. Eppler. 2007. "A Periodic Table of Visualization Methods," version 1.5. Visual-Literacy.org. http://www.visual-literacy.org/periodic_table/periodic_table.html.
- Ogburn, Joyce L. 2011. "Lifelong Learning Requires Lifelong Access: Reflections on the ACRL Plan for Excellence." *College & Research Libraries News* 72, no. 9 (October): 514–515.
- Shreeves, Sarah L. 2009. "Student Research on the University and in the Institutional Repository." Digital Library Federation Spring Forum. Raleigh, NC May 5, 2009. <https://www.ideals.uiuc.edu/handle/2142/13054>.
- SLC (Student Life and Culture Archival Program). 2012. Homepage. Accessed December 6. <http://archives.library.illinois.edu/slc>.
- Stamatoplos, Anthony. 2009. "The Role of Academic Libraries in Mentored Undergraduate Research: A Model of Engagement in the Academic Community." *College and Research Libraries* 70, no. 3 (May): 235–249.
- Warren, Scott, and Kim Duckett. 2010. "Why Does Google Scholar Sometimes Ask for Money? Engaging Science Students in Scholarly Communication and the Economics of Information." *Journal of Library Administration* 50, no. 4: 349–372.