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The ILE Project: A Scalable Option for Customized Information Literacy Instruction and Assessment

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THE ILE PROJECT

A scalable option for customized information literacy instruction and assessment

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ABSTRACT

With the vast amount of information available today, information literacy (IL) education is a critical component of undergraduate education necessary to prepare students for tomorrow's world. Instructors want students to demonstrate critical thinking skills and are often disappointed with student submissions resulting from undeveloped IL skills. Library Instruction programs are often tasked with addressing this educational need and often struggle to find a scalable method to provide IL instruction to the student body. The Information Literacy Education (ILE) Project is an asynchronous learning environment tailored to deliver instruction and assessment. Posited as a customizable option to present IL instruction, this flexible learning environment can be tailored to develop skills not taught in the classroom setting, but often expected of the students as they complete their assignments. Applications at a major research institution are presented, demonstrating the variety of ways ILE has been integrated into the curriculum. ILE has been used in 240 sections of nine courses across six colleges, involving 4500 student participants.

INTRODUCTION

In response to the ever expanding information environment, recognizing that "real world success" is dependent on navigating and effectively utilizing information, the academy increasingly is acknowledging the need to produce information literate graduates. The concept of developing the information literate citizen who can access and synthesize information in developing their own understanding and position (Firooznia & Andreadis, 2006) is echoed by Elisabeth Dudziak. She writes, "[Information Literacy

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(IL)] is more than a sum of attributes, [it] is a process that conducts to social inclusion through the adequate mobilization of interrelated contents, which are knowledge, abilities and attitudes directed to citizen actuation" (2006). To prepare students of today to enter the workforce of tomorrow it is crucial to integrate IL instruction into higher education (Gross & Latham, 2007). In 2006, Washington State University formally acknowledged the need to produce information literate graduates by incorporating IL into the Six Learning Goals of the Baccalaureate (WSU, 2006).

A primary objective of this paper is to describe the Washington State University (WSU) Library Instruction Department's Information Literacy Education (ILE) project, a customizable online learning environment designed to provide IL instruction and assessment. A second key goal is to present an argument that ILE is an effective option for addressing the IL instruction scalability issue that faces most academic libraries (namely too few librarians to provide meaningful instruction to large student populations). Finally, the authors outline the incorporation of ILE into the curriculum on the WSU Pullman campus and illustrate how these varied course deployments represent effective instructor–librarian collaboration and targeted student IL development.

LITERATURE REVIEW

A common misconception in the academy is that today's students, who have grown up with the Internet and are comfortable interacting with the Web, arrive at institutes of higher education already information literate. Andrea Foster (2006) reports on a study from the Educational Testing Service of 3,000 college students and 800 high school students finding only 13% of the sample was information literate. A mistake too often made by educators is equating digital literacy with IL. Although current students arrive on college campuses as digital natives, their IL competencies have not improved with access to technology. Most students still lack the ability to ask appropriate questions, find appropriate information, or perform focused

analyses (CIBER, 2008; Williams et al., 2006). Students frequently share this misconception and often equate their own digital literacy with IL. Competency theory, as described by Dunning and Kruger (1999), suggests that people's own incompetence in an area keeps them from realizing that they are in fact incompetent and promotes overestimation of their abilities. For example, undergraduate students often overestimate their abilities in relation to how well they test (Gross & Latham, 2007). Scott and Simmons (2006) suggest that assessing your students' abilities before an educational intervention will assist in demonstrating a need for instruction, and in adapting instruction to address student weaknesses.

Assessment is a component of quality instruction in all areas of education including IL instruction. In addition to pre-testing students as suggested by Scott and Simmons, assessing the impact of instruction is essential in determining if the intervention had positive effects. Educators should acknowledge that the plate of the undergraduate is crowded. Social and academic demands pull these students in many directions at once, hence the intrinsic value of completing an assignment or "assessment tool" is often lost. Weighting an assignment properly to ensure participation will vest the student in the process (Harrison & Rourke, 2006; Scott & Simmons, 2006).

In addition to overconfidence and a perceived lack of time, students experience many other factors contrary to IL development. The ability to express an information need and form a search strategy are key components to locating any resource, particularly the scholarly resources of the academic environment. Difficulties in developing effective search strategies are the result of novice researchers' tendency to have a less than adequate understanding of their information need. Students often are left with little to no idea about how to select and narrow a topic (Head & Eisenberg, 2009; CIBER Group, 2008). This tendency results in a strong preference for using natural language searches, which generally

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produce less than adequate relevant resources for the information need. Furthermore, a poorly defined information need is often one of the common frustrations instructors cite when evaluating student submissions (Head & Eisenberg, 2009; CIBER Group, 2008; Klingberg, 2006). The problem of selecting appropriate sources is noted frequently throughout the literature and examinations of bibliographies demonstrate the full extent of inapt source use (Sult & Mills, 2006; Head & Eisenberg, 2009; CIBER Group, 2008; Klingberg, 2006; Ursin et al., 2004).

Student bibliographies are often comprised mostly of open web sources, or information sources that are unsuitable for the assignment. They use these lower quality and secondary sources in place of primary sources (Spackman, 2007; Scott & Simmons, 2006). But, accessing and classifying peer-reviewed resources as primary, secondary, or tertiary may be beyond the abilities of many undergraduates with underdeveloped research skills (Spackman, 2006). Students motivated by convenience will find alternate sources when promising results are not available or they don't understand how to locate the proper sources locally (Brown & Krumholz, 2002). This concept of convenience in accessing resources is exaggerated by the ease of electronic access and conflicting demands on students' time.

Two other common IL pitfalls for students are poorly developed information evaluation skills and careless citation practices. Many developing researchers tend to scan quickly, spending little time on any one [Web] page, bouncing or flickering from one page to the next (CIBER Group, 2008). This behavior is troubling because it lacks critical evaluation and leads to the production of undergraduate literature reviews which lack rigor (Scott & Simmons, 2006). Furthermore, the extent to which a student uses proper source documentation can be indicative of the understanding of the legal and ethical issues surrounding research. While the discussions of the "death" of copyright are widespread on the open Web, within the academy, acknowledging

intellectual property remains a serious issue. Brown and Krumholz (2002) note that even after educational interventions, a lack of cited sources continues to be a problematic failing for many students. A failure on the part of instructors is evident when student papers show little respect for intellectual property.

Students clearly lack IL skills on many fronts, so who should be responsible for reversing this trend? Currently, there is a debate in the academy as to who should be teaching IL: course instructors, librarians, or both? On some campuses it is not so much a debate, but simply confusion about who is responsible to teach IL skills. Questions surface regarding what kind of assistance is available from libraries, acknowledging that many teaching faculty also lack an understanding of the IL skills necessary in today's world (Leckie & Fullerton, 1999). A collaborative approach, with extensive consultation between teaching faculty and librarians, is becoming the favored method of providing instruction (Spackman, 2007; Sult & Mills, 2006; D'Angelo & Maid, 2004). Spackman (2007) also states that the collaborative instructor–librarian partnership needs to include the mutual development of an effective research assignment.

Instructors who desire to include IL activities in their classes often feel overloaded with disciplinary material and struggle with finding a suitable manner for incorporation. Instructors with this conflict often seek opportunities for student self-directed learning, generally in the form of online instruction (Leckie & Fullerton, 1999; Thomas, 1994). Online IL instruction has been shown to be as effective as instruction provided in-person (Nichols, Schaffer, & Shockey, 2003; Bridgland & Whitehead, 2004). Instructors not feeling overloaded with disciplinary material often prefer in class instruction mediated by a librarian. Frequently instructors indicate they have learned a new skill or technique and view these sessions as opportunities to refresh their own IL skills (Sult & Mills, 2006). While online and face-to-face instruction are viable options alone, a blended approach is preferred, often producing the most

effective results (Bridgland & Whitehead, 2004; Brown & Krumholz, 2002).

Timing and relevance of instruction also play significant roles in IL skill development. Providing instruction when students are immersed in a project necessitating evidence of IL skills will improve learning (Leckie & Fullerton, 1999; Brown et al., 2003). Informing students that IL skills are key in the information research and documentation process is not enough. Instruction with an impact happens when students see the importance of IL in their lives (Brown et al., 2003). Successful methods for conveying the relevance of IL skills to students' lives include instructors and librarians communicating to students how they go about their information research as well as providing guidance and encouragement when students embark on their own research. These conversations offer different perspectives of expertise in approaching information research (Sult & Mills, 2006; Scott & Simmons, 2006). Unfortunately, conversations regarding the processes of IL related skills are rarely included due to other content demands of courses. Having learned these lessons, the authors have developed a model of IL instruction that addresses areas of student weakness, incorporates a collaborative approach with faculty, and provides assessment opportunities within the context of the student assignments.

A DESCRIPTION OF THE ILE PROJECT: HISTORICAL BACKGROUND

In 2006, the Six Learning Goals of the Baccalaureate were adopted at WSU. These six goals, one of which is IL, are the overarching objectives each undergraduate is to have achieved by graduation (WSU, 2006). The ILE project represents a central way the library instruction program at WSU has constructively addressed the mandates and objectives of the Washington State legislature and the Washington State University learning goals.

Development of the ILE learning space started in the spring of 2007 and the project was launched with the inaugural set of partner courses in fall 2007. Over the course of the last five academic terms the ILE project has involved nine courses, 240 course sections, and nearly 4500 students across six colleges (see Appendix A). During the 2007/2008 school year, the ILE project helped increase the WSU-Pullman Libraries' total library instruction session participant number by nearly 20%. Every instructor who has participated in the project has continued with it in subsequent terms.

A DESCRIPTION OF THE ILE PROJECT: BASICS

The Information Literacy Education (ILE) project is a flexible online learning environment which delivers IL instruction targeted to the needs of specific research assignments. Through the ILE project, librarians and course instructors collaborate to design an additional component to an existing research project that directly addresses the IL skills required to complete the project. While many institutions have developed comprehensive IL tutorials to provide online instruction, ILE is different. Where as comprehensive IL tutorials, often modular in nature, can be chunked to address the needs of different assignments, the scope of assignments able to be addressed is limited to the scope of the tutorial. ILE does not share this limitation. ILE connects the best tutorials available from the open Web on relevant IL concepts to particular components of an assignment. By expanding the scope of tutorials that can be utilized to those available from the open Web, the utility of ILE goes beyond that of any individual tutorial or the offerings of any one institution. The ILE project is online at https://li.wsulibs.wsu.edu/ile/.

For each course, an online class page is crafted and divided into sections representing the IL Standards for Higher Education (ACRL, 1989). Each customized class page provides the students with an introduction to the requirements for a particular phase of the assignment and online tutorials on topics relevant to that particular component. The students, therefore, engage the tutorials with a

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specific part of the assignment in mind and build the skills necessary to successfully complete that part of the assignment. In addition, the students' understanding of the tutorials is assessed through multiple choice quizzes, and their ability to transfer the learned material to their assignment is evaluated through short essay questions. Course instructors operate within the ILE environment by electronically grading and offering feedback throughout the experience.

The following example, described in this paragraph and illustrated in the screen shot below, is designed to aid in understanding the ILE learning space. The authors know that many of the collaborating course instructors allow and/or require their students to use materials from the open Web as part of a mandated and/or optional set of information formats required for their research assignment. A problem instructors frequently encounter is the lack of scholarly websites among student selections. In response to this assignment requirement and the common problem it presents for students/instructors, librarians place tutorials (see "Learning Tutorials" area in Figure 1: Screen Shot) in the "Evaluating Information" section of the ILE learning space which outline

criteria for quality website identification. After the students complete the tutorials they take a quiz (see "Evaluating Info Quiz" in Figure 1) which tests their knowledge of these criteria. Next, they answer a short essay question (see "Assignment" area in Figure 1) asking them to describe a website they have selected for their research in terms of the criteria presented in the tutorials. Instructors and librarians then view student submissions and comment and/or grade their work. The students then transfer knowledge gained from this experience to the work for their research assignment.

A RATIONALE FOR ILE: SCALABILITY ISSUE ADDRESSED

The overarching goal of most academic library instruction programs is to develop the IL skills of the institution's affiliates (primarily students). The challenge is always how to approach this objective in an effective and meaningful way.

Nearly all library instruction efforts can be placed on a continuum. At one end are the most general kinds of IL sessions. These "canned" sessions are repeated to reach, for example, the entire freshman class at a college or university. They are not customized to a particular course

FIGURE 1 — ILE LEARNING SPACE SCREEN SHOT
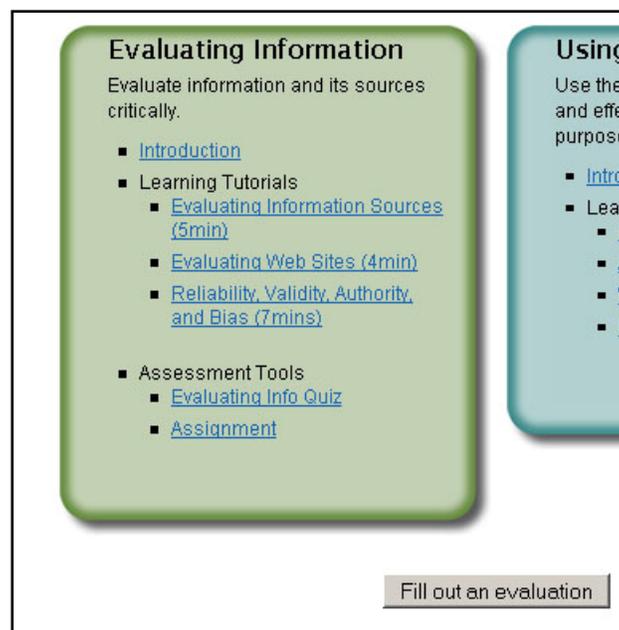
or even departmental curriculum. A small cadre of librarians may teach large blocks of these short one-shot sessions in the first few weeks of an academic term. An advantage of this kind of library instruction is scalability; instruction librarians can reach a large student population. Also, it provides a foundation for meaningful assessment across an expansive group. Disadvantages of this kind of learning experience include the fact that students often do not understand the relevance of the instruction because of a lack of context and it is simply too difficult to provide IL instruction in one session. More often than not, these sessions, which are envisioned as IL classes turn into "bibliographic instruction" sessions with the librarian demonstrating the catalog or a standard set of article databases, and IL tenets become secondary in focus.

At the other end of the spectrum are IL teaching instances where the librarian is co-teaching, or is perhaps the instructor of record, for a credit-bearing course. The librarian gets to know students and their shared experience is often within the context of a subject discipline. The librarian has numerous class sessions to foster and assess the growth of student IL skills. The main drawback to this kind of teaching arrangement for librarians is its lack of scalability. If a library instruction program's aim is to nurture the IL skills of all students (within a department, school or academic institution), concentrating so much effort on one course is not a wise strategy. It is also not feasible for the vast majority of institutions to have all students take a course like this because there are simply not enough librarians to staff the requisite number of sections.

ILE is a powerful learning space chiefly because it utilizes the benefits of instructional activities at both ends of the spectrum while minimizing the drawbacks. ILE is very scalable; thousands of students may use the space in any one term. At the same time, ILE is much more than an online list of recommended tutorials for a given course or departmental curriculum, or a generic overview of library services and resources. Instructors and librarians work together before

the research project is assigned to populate an ILE learning space with tutorials and assessment activities that are customized to the research assignment(s) of the course.

Students feel empowered because engaging activities within the learning space help them successfully complete their required course work. Instructors are pleased with not needing to devote any valuable class time to library instruction, with students' greater use of scholarly materials, and most importantly, with better student research projects. Instruction librarians are happy because their tutorials, created with specific intentions in mind, are being used in a meaningful context. Librarians also have assessment data from students to measure IL skill development and, in turn, use in the process of creating better instructional materials. Finally, instruction librarians are delighted to be fruitfully addressing their primary goal of developing the IL skills of the institution's students.

EXAMPLES OF ILE DEPLOYMENTS

The flexibility of the ILE environment allows for a variety of potential applications dependant upon instructor objectives, each requiring different levels of collaboration, assessment, and student engagement. What follows are brief descriptions of the different treatments that have been employed to date.

Crops/Horticulture 102: Cultivated Plants
A shared course with students enrolled from both WSU and the University of Idaho and co-taught by two WSU instructors, Crops/Hort. 102 has participated in ILE each fall beginning in 2007. A collaborative effort in assignment design between librarians and course instructors has created a fully integrated scenario, placing IL instruction and assessment as a central course objective. ILE has been integrated into the phased "Crop Report" assignment and utilizes all major components that the ILE environment offers including tutorials, quizzes, and short answer questions.

To support the assignment, a blended method of

in-class and online instruction is utilized; a librarian is invited to participate as a guest lecturer twice each semester to discuss IL topics, administer the pretest, and introduce the learning environment. A substantial portion of the students' grades for the semester are allotted to ILE and the rest of the "Crop Report" assignment. In fall 2008, a full 28% of the final grade was attached to these two components of the course.

Pre-tests have been provided each semester and analyzed against post-test scores after the instruction was provided. In fall 2008 an additional report analyzing participation by class level, as well as a question analysis, was provided to assist in assessing the experience.

Geology 101: Introductory Physical Geology for Non-Science Majors

Geology 101 is the course where librarians have reached the largest number of students to date. Approximately 40 sections are taught each spring and fall semester with an average total of about 600-700 students. ILE is connected with lab sections which are taught by graduate teaching assistants (TAs). Brief training is provided to the graduate TAs at the beginning of the semester and a follow up session to report on the experience. This has provided invaluable information and has driven many of the enhancements of the ILE environment, including sorting features for viewing grades, integrating 'stop screen shots' when assigning only part of a comprehensive IL tutorial, which show a screen shot of the last required screen a student is responsible for completing, and indicating the section number on virtually every screen, to name a few.

The application of ILE in Geology 101 has evolved through collaborative efforts of librarians and teaching faculty, and the credit allotted to ILE has increased substantially. In fall 2007 ILE was integrated into a particular week's lab with work to be done outside of class in addition to in-class lab work. The instructors and librarians quickly realized that not enough credit was being allotted to the assignment in relation to the amount of work required to complete it. The credit allocation was changed and the assignment itself was overhauled, linking it to a larger research assignment and phasing the work throughout the semester. Since modifying the assignment, student evaluations have been more positive and overall participation has increased.

Biology 105: Biological Sciences Lab (Distance)

Biology 105 has utilized ILE for the last 3 semesters. Collaborative efforts of the course instructor and librarian have resulted in integrating ILE into a "Team Investigation" where students complete a scientific experiment over the course of the semester. ILE provides instruction on topics relevant to completing the project, such as how to read a scientific article and writing errors to avoid. Students take tutorials on concepts relevant to their assignment, complete multiple choice quizzes, and provide short answers that are used to build components of their "Team Investigation" report.

Soils 101: Organic Gardening and Farming (Distance)

Soils 101 incorporated ILE in both a summer session and fall semester of 2008. Fully integrated into the existing phased "Short Research Paper" assignment, ILE is utilized to its fullest, including tutorials, quizzes, and short answer questions. Focused on the processes of information research and the beginnings of drafting a paper, ILE provides targeted instruction in areas such as identifying a topic and writing a research question, accessing appropriate databases for searching, utilizing methods for efficiently reading a scientific paper, and applying proper citation.

Needed Information Soils 101 short answer example:

> For your short essay paper you must identify a statement from the list provided and review the literature providing a summary of your findings. The information below is a preview of what you will be asked upon completing the tutorials. You will be asked to

complete similar assignments for each standard hereafter.

1. Identify the topic for your paper by identifying the quote that you will be evaluating.

2. Craft a research question from the topic selected. E.g. If the statement that you are addressing is "There is only one choice for alternative fuels, ethanol is the answer", your research question may be something like "What types of alternative fuels are available or are in development?" or "What are alternative fuel options beyond ethanol?"

Philosophy 260: Introduction to Ethics (Distance)
Philosophy 315: Philosophies and Religions of China and Japan (Distance)
These two Philosophy distance courses have employed ILE in a very simple manner. Students are provided instructional materials and a quiz to assess learning. The instructional materials include an online tour of basic library offerings and services aimed specifically at distance students and a handout covering elemental search techniques.

This ILE deployment is one of very little collaboration. The instructor of record for these courses approached librarians wanting to incorporate a basic 'How to use the library' component into his classes. His objective was to introduce students to research tools and services available and to provide basic instruction on how to search in an academic library setting.

English 101: Introductory Writing
Introductory Writing is a general education requirement at WSU, with most students completing the course during their freshman year. The Library Instruction Department (LI) has a long history of partnering with the English Composition Program to teach LI

sessions primarily to English 101 classes. As with any partnership, this relationship has evolved and changed over time. In fall 2008 the librarians began using the ILE project with composition courses as a pre-LI session learning activity. Students were assigned the WSU Libraries Online Tour for Undergraduates, which provides an introduction to basic library tools and services. After completing the tutorial, students took an online quiz (in the ILE learning space). Librarians preparing for sessions could then view aggregate results for the class by question, identifying weaker areas of student understanding, in order to target their lesson accordingly. Select instructors required students take the ILE tutorial and quiz, demonstrating greater integration into their curricula. Not surprisingly these classes had higher participation rates in ILE and thus better preparation for the in-person instructional session.

World Civilizations
World Civilizations (GenEd 110 and 111) are survey courses covering the major civilizations of human history. During the 2008 fall semester, four World Civilizations instructors used the ILE learning space. GenEd 110 requires a library research assignment and many GenEd 111 teachers opt to do such an assignment as well. The learning spaces varied greatly among the instructors because of their differing assignments and ways they wanted to use ILE. One teacher desired a very simple application of ILE that consisted of using only one tutorial and one quiz. Another instructor had students write a book review, so the tutorials presented provided instruction on how to write book reviews and read sample book reviews from scholarly sources within history (the academic discipline). In another section, the instructor asked students to develop their own research questions and thesis statements, so this course's tutorials outlined ways to work from general topics to specific theses. In a final section, the teacher had found from past experience that her students often were unsuccessful at citing their sources. These students used the ILE space to take a tutorial about MLA citation style and submit a sample

citation from the resources they were gathering for the course research assignment. Most of the instructors reported student advances in areas they especially wanted to target for improvement.

DISCUSSION

As too often happens in the academy today, instructors assign work to students without properly equipping them with the skills and tools necessary to complete the assignment. ILE has proven itself as an instrument that can deliver this skill-building instruction in the context of specific course research assignments without monopolizing valuable class time. Each ILE course-page, collaboratively designed with the instructor of record, provides opportunities for librarians to be embedded in the process of curriculum creation and delivery. This collaborative process provides the basis for targeted opportunities for learning that is evident through both the assessment modules offered within ILE and the transfer of concepts and skills demonstrated in students' final projects.

The collaboration between librarians and instructors varies based upon the challenges that instructors indicate they typically encounter with student work and the assignments that are determined to be the most appropriate for the educational intervention by examining the curriculum for the course. Together they discuss the appropriate amount of course credit to allocate to the overall assignment, and those components included within the ILE environment. These choices are dependent upon overall course requirements and the amount of time and effort students will need to complete the assignment.

After the initial meeting, the librarian deconstructs the assignment, identifying those components of IL that are inherent within the assignment and mapping them to an appropriate area of ILE (and information literacy standard). The librarian then makes suggestions as to which tutorials should be included in each area. The instructor and librarian typically meet again

to discuss the options for tutorials, assessment possibilities, work completion timelines, and how to access and use the instructor space of ILE. Within the general area of assessment possibilities, the collaborators consider short answer question options, and often the potential exercise of pre-testing students using a multiple choice quiz. The total time involved in these steps varies greatly from course to course, but about three to five hours is a fair estimate.

A key benefit to pre-testing in addition to providing a baseline of student understanding is providing students an opportunity to see for themselves how they fare in their understanding of IL concepts. That is, IL is an area where competency theory is very relevant. Students often believe that they are information literate and don't need focused instruction. This is rarely the case however; hence the pretest provides the opportunity for students to see how well they perform on the types of challenges that they will be asked to work through in completing their assignment. Often this becomes an eye-opening experience that makes students more comfortable toward receiving IL instruction.

Once decisions have been made, the librarian creates the ILE assignment-space for the course. The process of populating an assignment-space can be accomplished in less than an hour. The ability to rapidly build assignment-spaces that can be utilized by multiple sections of a course or multiple courses adds to the appeal of ILE as a scalable solution for providing contextualized IL instruction to large numbers of students.

For example the full integration of ILE within the Crop Report assignment in the Crops/Hort course provided students with the background knowledge and research skills instructors expect to complete the assignment. The blended approach of incorporating a librarian as a guest lecturer provided multiple perspectives on approaches to information research. Students became acquainted with the collaborating librarian and contacted him for assistance outside of class. The assignment was given a significant enough portion of the total course

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grade that students approached it seriously.

Vesting students in an assignment requires more than proper assignment weight; it also requires the commitment of the instructor. When working with the Geology 101 course, commitment from the TAs responsible for each of ~40 lab sections was initially problematic. The TAs have many demands on their time and viewed incorporation of ILE as just something else to grade. In earlier semesters "grading" student work most often was comprised of verifying a student had submitted the assignment rather than evaluating if the work submitted met the objectives of the assignment. This, in addition to improper assignment weight, marginalized the assignment in the eyes of the students. As the assignment evolved to be a more central part of each student's course grade, as it changed to phasing the work throughout the semester, and as it was tied with a larger research project, student reluctance to participate has waned.

Delivering IL instruction and assessment to a class of ~700 students creates obvious challenges in terms of scalability. Utilizing ILE has created a scenario where students who had previously not received LI in the introductory geology class, or at best had received one large group lecture, now receive LI/IL instruction throughout the semester. Linking the ILE assignment with a larger research assignment has reduced the number of student comments along the lines of "what does this have to do with Geology" which previously had been a concern with the design of the assignment.

Although support for distance students is provided by the WSU Libraries, an outdated overall approach to support distance education has resulted in distance courses having neither an in-depth library intervention nor a specific focus on IL. Working with the Soils and Biology courses provided not only an opportunity to deliver support for these specific courses but the nature of the integration of the instruction and assessment provided multiple opportunities for students to contemplate IL related issues.

Not all collaborative efforts result in a full integration into the course curriculum or even a research assignment where students can demonstrate what they have learned by transferring it to their assignment. The treatment utilized in the distance philosophy courses met the instructor's objective of introducing students to library services for distance students while requiring little instructor–librarian teamwork. While in the minds of the collaborating librarians this variety of partnership is not ideal in that it provides neither substantial IL instruction nor is integrated within an assignment, this application does have benefits. Students in this traditionally underserved population receive some LI concerning basic resources and services. Further, students are thinking about information research and engaged in the processes of how to access different varieties of resources from a distance. They are also provided with an additional point of contact for assistance as the collaborating librarian's contact information is included in each course space.

As is evident concerning the ILE application with the philosophy courses, not all library instruction targets a specific assignment. The treatment employed with the Introductory Writing course gives students the opportunity to contemplate information research in an academic environment before they arrive for an in-class instruction session, while providing a baseline of student understanding for librarians. Through this process librarians have identified three general areas where students typically demonstrate a lack of understanding. Introductory Writing students have demonstrated that they have difficulty recognizing that the catalog is not the best place to search for articles, understanding how to use "Find It," the WSU version of the SFX link resolver to access electronic sources, and knowing when to use the consortial catalog "Summit." In addition to using the ILE quiz results as a metric for gauging general areas where students typically have comprehension problems, the results of these quizzes will be analyzed over time to assist in improving online tutorial offerings.

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The various applications employed with the World Civilizations sections demonstrate how ILE can be used to address vastly different instructor objectives. Unfortunately, two of the five instructors did not require students to use the ILE space so student participation was very limited. Again, embedding the ILE work into the course credit structure is important. Timing of IL instruction is critical and experiences with two of the World Civilizations partners illustrated the important flexibility ILE offers in this regard. The instructors changed the order of the content in their syllabi, which meant the students were viewing ILE tutorials and engaging ILE assessment components at different times than were originally slated. If the instruction had been in-person, such adaptations could have been thwarted by librarian or classroom scheduling conflicts. In the ILE learning space, students can take tutorials at any time and quiz due dates can be changed at any time. The overall strength of the World Civilizations ILE applications at this point is the close tie between the selected slate of tutorials and the course research assignment.

CONCLUSION

ILE has proven to be a valuable tool for the WSU Libraries to address a variety of educational objectives, as can be seen through the examples included. It is a primary tool the Libraries are employing to meet the department goal of providing contextualized IL instruction to a sizable student body. It is not however the only tool, and lessons learned along the way are applicable to any librarian engaging in collaborative assignment design regardless of environment. In the future, discussions with faculty in addition to focusing on the objectives of the educational intervention will also stress the importance of foundational choices that support the assignment. These choices have a substantial effect on the willingness of students to participate and accept instruction.

Foundational choices such as which assignment in the curriculum best "fits" the objective of the IL instructional intervention are of great importance. Providing the instruction in the context of a disciplinary research project vests the students in the process, as was seen in the geology class. Further, the choice of phasing the assignment when appropriate has been demonstrated to have multiple benefits. Students are able to focus on smaller aspects of the assignment rather than attempting to work through multiple tutorials and assessment pieces at once. Feedback provided at each phase provides students with the confidence that their work is progressing in a direction that satisfies the assignment requirements and instructor expectations. It is of considerable importance that students are afforded multiple opportunities to consider how the IL concepts they have learned are relevant to their disciplinary work. This is an advantage any phased-assignment accompanied by instruction has over the typical one-shot IL session most students receive. Students respond more appropriately when they are committed to the assignments — that is, when tutorials and assessment activities are required and weighted. This is a pitfall that the authors have fallen into on more than one occasion and one to avoid as it sabotages the assignment and undermines the effectiveness of the collaborative effort.

A preliminary analysis of student competencies based upon individual quiz question performance indicate that while students are comfortable with most of what they encounter on the open Web, their understanding of and ability to use local tools effectively (link resolvers, local catalogs and consortial catalogs) is limited. Further, students performed better on the assessment activities in the information literacy standard areas of needed, evaluating and using information than accessing information. This is likely because the 'accessing information' space has the most extensive set of tutorials, resulting in more testable material. In addition, accessing information tutorials typically involve instruction concerning locally named tools and location specific procedures. Students come with no prior knowledge in these instances. This information will be considered when naming and presenting new tools in the future (e.g., naming the libraries catalog, "catalog"). It will also influence the content of

in-person sessions, as librarians will use this information to focus on areas where students have demonstrated a lack of competency.

Future studies will focus on examining student submissions in quantitative and qualitative ways. A statistical analysis of quiz question results will assist in identifying concepts where student understanding is weak. Since quiz questions are tied to specific tutorials, student performance on the questions is an important indicator for evaluating tutorial effectiveness and directing tutorial restructuring efforts. It is a central goal to be able to statistically demonstrate that students successfully utilizing the ILE space create superior research papers. In terms of qualitative analysis, the authors plan to carefully examine student evaluations of ILE across course spaces to find trends in their comments.

The ILE learning environment is currently being redesigned to streamline backend processes with the intent of a 2009 release as an open source product. In addition to always seeking more ILE collaborators within the WSU community, the Libraries are currently looking for partners outside of WSU to broaden the usage of the ILE learning space.

Information literacy continues to justifiably get more attention as a central learning goal in higher education. Unfortunately the educational community still has much work to do in terms of effective information literacy instruction, as significant evidence indicates students have numerous information literacy inadequacies, from problems with expressing an information need to careless citation practices. An instructor–librarian collaborative approach is emerging as the best way to address information literacy instruction, while the timing of information literacy instruction, its clear relevance to aiding in the completion of course research assignments, and effective assessment, are all of top importance as well. The WSU Information Literacy Education learning space embodies these best practices and has shown itself to be a flexible and scalable way to meet information literacy instructional needs.

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APPENDIX A – ILE PARTICIPATION BY SEMESTER

Semester/ Year	Course	Section(s)	Number of Students who Participated
fall 07	Geology 101	43	659
fall 07	Hort./ Crops/ 102	1	44
spring 08	Biology 105 (DDP)	1	33
spring 08	Geology 101	42	452
spring 08	English 101	9	183
summer 08	Soils 101 (DDP)	1	8
fall 08	Geology 101	42	618
fall 08	Biology 105 (DDP)	1	60
fall 08	Hort./ Crops/ 102	1	49
fall 08	soils 101 (DDP)	1	16
fall 08	Phil 260 (DDP)	1	25
fall 08	English 101	19	266
fall 08	GenEd 110	4	370
fall 08	GenEd 110	1	48
fall 08	GenEd 110	2	144
fall 08	GenEd 300	1	5
spring 09	Geology 101	41	650
spring 09	English 101	21	425
spring 09	English 298	1	7
spring 09	Biology 105 (DDP)	1	56
spring 09	GenEd 110	4	321
spring 09	Phil 260 (DDP)	1	29
spring 09	GenEd 300 (DDP)	1	12
Total Participation:		**240**	**4480**