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Assessment of information literacy instruction

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ASSESSMENT OF INFORMATION LITERACY INSTRUCTION

A Thesis

Presented to

The Faculty of the School of Library and Information Science

San José State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Library and Information Science

by

David E. Gross

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ASSESSMENT OF INFORMATION LITERACY INSTRUCTION

by
David E. Gross

APPROVED FOR THE SCHOOL OF LIBRARY AND INFORMATION SCIENCE

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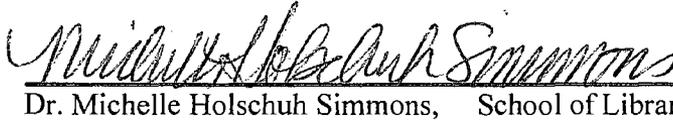
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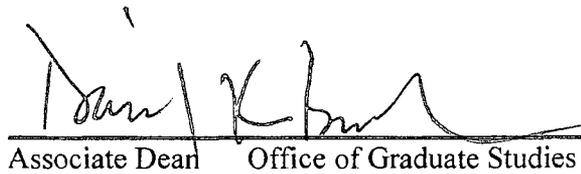
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ABSTRACT

ASSESSMENT OF INFORMATION LITERACY INSTRUCTION

by David E. Gross

Information Literacy Instruction (ILI) is a topic of increasing importance and

interest to the library community and especially to academic librarians. The assessment of

ILI is also of increasing importance, as institutions seek to improve the effectiveness of

their ILI programs and as they are required to provide evidence of this effectiveness both

internally and to external agencies and the public. While many types of assessment

methods have been used for ILI, the focus of this research was to analyze three specific

methods: a) pre- and post-test questionnaire, b) reflective essay, and c) experiential

research task final exam. These data were collected as part of the classroom assessment of

university freshmen students taking a required library class in the fall quarter of 2008.

Aggregate summary data were analyzed for each of five classes. Students were not

identified, and only class averages were reviewed. Summary data from the pre- and post-

test questionnaires collected for the fall quarters over a four-year period were also

compared. The results of the analysis indicated that the pre-/post-test questionnaire was

not a reliable method for assessing student success. The reflective essay grades and the

experiential final exam grades each were significantly higher than the post-test

questionnaire scores, suggesting that these methods were more valid assessment methods

of student learning. The historical questionnaire data did not indicate any consistent trends

in student learning over the four-year period. More research on the reflective essay and

experiential final exam as ILI assessment methods was suggested.

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I am very grateful for the support of the library faculty at California State University East Bay during my research study. I met many of them while a student intern in the summer of 2008 and they enthusiastically encouraged me to conduct my research with their library classes in the fall of 2008. Some of them provided the data for this study, but I appreciated the support of all of them for my research project. These library faculty members are Tom Bickley, Judy Clarence, Judith Faust, Liz Ginno, Malka Helfman, Doug Highsmith, Paul MacLennan, Steve Philibosian, Kris Ramsdell, Mark Singer, and Aline Soules. I wish to thank Kris especially for her mentorship and encouragement while I served as her teaching assistant in the summer.

Finally, I would like to express my deep gratitude for the constant and loving support of my wife, Margo, who has been my faithful and encouraging partner in my pursuit of this new career.

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Chapter 1: Introduction

This research is about the assessment of information literacy instruction (ILI) of undergraduate college students. The topic of information literacy with regard to library instruction has been studied fairly recently, in contrast to older, more familiar names for library instruction, such as the bibliographic instruction (BI) concept.

Before considering the assessment of ILI, it is important to understand the nature of ILI and how it differs from previous types of library instruction.

Information Literacy Instruction Described

The idea of library instruction or bibliographic instruction (BI) has been one of the concepts and tasks associated with librarians for many years (Grassian and Kaplowitz, 2001). The term "BI" is used here to represent library instruction of various types, excluding the more recent term "information literacy instruction" (ILI) to which it is compared. BI has usually referred to learning the tools and skills required to successfully use a library for finding information (Budd, 2005). With the increasing amount of information from different sources and the growing complexity associated with retrieving information in the 1980s and 1990s, librarians were frequently asked by college faculty to provide specific instruction on how to do this (Grassian and Kaplowitz, 2001). While BI tended to focus on library activities and the use of tools to get information, it lacked the larger consideration of critical thinking and broader tasks needed to do research (Andretta, 2005).

The broader concept of information skills and library instruction may be divided into two parts: 1) lower-order competencies, like information-seeking and retrieval and

2) higher-order understanding, extending the lower-order skills to include evaluating

information search results as to quality, relevance, and validity and determining how to

use the information (Maughan, 2001). The first is associated with BI, while the second

refers to ILI, which was developed by librarians to meet the need for such understanding.

The original use of the term "information literate" was by Paul Zurkowski,

President of the Information Industry Association, who in 1974 suggested that it meant

people who were skilled in applying information resources to their work, using these

skills and tools to solve problems (Maughan, 2001). ILI is the instruction by librarians in

a set of skills that cover identifying the need for information, how to find it, how to

evaluate it, and how to use it to meet this need for information. Information literacy (IL)

skills extended beyond the skills needed for using the library (Meulemans, 2002). As

Iannuzi put it in 1999, "Information literacy incorporates conceptual, technical, and

critical thinking skills" (p. 304).

The Association of College and Research Libraries (ACRL) published a set of

standards for information literacy competency for colleges in 2000 that was helpful in

providing an official definition of IL (ACRL, 2000). This followed the lead of the

American Association of School Librarians (AASL) which had developed standards for

K-12 school libraries in 1998 (AASL, 1998). The ACRL standards are as follows:

An information literate individual is able to:

- Determine the extent of information needed
- Access the needed information effectively and efficiently
- Evaluate information and its sources critically
- Incorporate selected information into one's knowledge base
- Use information effectively to accomplish a specific purpose

- Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally

ILI was also a response to the availability of information from beyond the library, with the danger that users would not have the skills to evaluate and selectively choose the best information for their use (Andretta, 2005; Grassian and Kaplowitz, 2001). In discussing the teaching of information literacy (IL), it is important to distinguish between the skills needed to demonstrate IL and those skills associated with computer literacy (ACRL, 2000; Flaspohler, 2003). Computer literacy includes those technical skills needed to use computers and software, which is different from the IL skills of finding and using information. Many of today's students are very computer literate with the skills to use this technology very well, but this often does not translate into being information literate (Flaspohler, 2003, p. 239).

Is it reasonable to consider if BI and ILI are different concepts, or are they really the same, but given different names? I believe that they are significantly different and there are several librarians in the field who agree. For example, Iannuzzi clarified the difference between ILI and BI when she stated "Information literacy is much more than library instruction, and requires an institutional involvement that extends far beyond the library. Librarians themselves must vigorously avoid the pitfalls of renaming library instruction programs as information literacy" (1999, p. 304). ILI uses library instruction tools as a foundation to achieve higher order skills for processing information and getting results that allow for making better decisions (Sharma, 2006). ILI represents a change in scope from previous library instruction, with a shift from teaching tools for finding information in a library to a focus on broader concepts by all information users and not

only library users. ILI builds upon the library instruction of the past to extend its breadth (Owusu-Ansah, 2004). The Association of College and Research Libraries (ACRL) has published a set of objectives for ILI that was addressed to academic librarians (ACRL, 2001). These objectives are based on the ACRL's standards for IL (ACRL, 2000), with measurable student outcomes identified. Thus, it seems clear that ILI is a newer and more comprehensive concept than BI and has attracted much attention in the field of librarianship in recent years—especially in the academic library.

Purpose of Assessment

Before selecting an assessment technique for an institution's ILI program, it seems reasonable to ask, why do assessments at all? Internally, the library needs to determine how effective its ILI programs are in terms of students achieving learning outcomes and how to improve those programs (Grassian and Kaplowitz, 2001; Knight, 2002; Maughan, 2001; Radcliff, Jensen, Salem, Jr., Burhanna, and Gedeon, 2007). Also, the library needs to demonstrate to the faculty and administration of its institution that ILI is effective in improving students' research skills (Avery, 2003; Grassian and Kaplowitz, 2001; Knight, 2002; Maughan, 2001; Radcliff et al., 2007). This is very important in gathering support for the library's programs when budget and planning decisions are made by the institution's administration.

Another reason to use assessment is that accreditation of higher education institutions requires meeting standards established by the accreditation bodies, and many of these standards now include the ACRL IL competency standards (ACRL, 2000). Thus, institutions need to provide assessment results (Dugan and Hernon, 2002; Iannuzi,

1999; Knight, 2002; Meulemans, 2002; Neely, 2006c; Radcliff et al., 2007; Saunders, 2007). Examples of accreditation groups that have adopted explicit IL competency standards are: (a) Middle States Commission on Higher Education, (b) New England Association of Schools and Colleges, (c) Southern Association of Schools and Colleges, and (d) Western Association of Schools and Colleges (Meulemans, 2002; Saunders, 2007).

Thus, ILI assessment is an important area of research that is relevant to today's academic experience and of interest to instructional librarians and their institutions. A review of the literature on ILI assessment follows in Chapter 2.

Chapter 2: Literature Review

Types of Information Literacy Instruction

Before discussing the types of assessment of ILI, it is helpful to review the types

of ILI that have been used. There are a great many methods available for delivering ILI

to college students. For a comprehensive list of possible methods with a discussion of

their advantages and disadvantages, see chapter 9 of the book by Grassian and Kaplowitz

(2001). These methods can be classified on several dimensions: (a) two modes of

instruction, in-person or online tutorial, and (b) four different types of instruction, one-

time session, several sessions, integrated with subject matter, or generic library content.

The methods of interest for this proposed research investigation are the in-person

technique using several sessions with generic library content.

Some examples from the literature indicate that ILI can be taught using the in-

person technique. In one example, a university library provided ILI in a series of in-

person workshops for students enrolled in a required first-year seminar course (Knight,

2002). The instruction covered concepts related to library research without reference to

specific subject matter. In another example, a similar approach was used at a small

college in which the librarians taught students in three sessions of a required set of

writing and speaking courses (Flaspohler, 2003). The instruction covered library

research concepts without regard to subject matter. The literature of ILI suggests that

many ILI sessions are one-time stand-alone sessions taught by librarians at the request of

faculty, rather than integrated in several classroom sessions (Saunders, 2007). However,

it is difficult to cover many of the ILI concepts or to assess the success of the instruction

when only a short time is available to the teaching librarians (Owusu-Ansah, 2004; Sharma, 2006). Examples of ILI using a series of sessions were reported at several universities (Knight, 2002; Neely and Sullivan, 2006; Sharma, 2006) and a small college (Flaspohler, 2003). In one of the universities, several sessions of a library class were used to teach ILI concepts, without regard to classroom subject matter (Sharma, 2006). At another university, the sessions were included as part of an overall class on studying critical issues, but the ILI sessions again were not subject-specific (Knight, 2002). Another university library integrated the ACRL standards (ACRL, 2000) with the ILI curriculum covered in a course developed by librarians (Neely and Sullivan, 2006). The use of an ILI course over several sessions is more likely to provide students the opportunity to learn the concepts better (Owusu-Ansah, 2004).

While the use of integrated subject-matter ILI is more typical today, it has been suggested that the best way to provide ILI that is effective is to offer a library class that covers the ILI concepts independent of classroom subjects (Owusu-Ansah, 2004). In this way, the librarian-instructor could give these concepts the full attention needed. Such a class would be even more effective if it were required for graduation, as this would ensure that the instruction would reach many more students than if it were optional. Examples of ILI using generic library content to cover ILI concepts, without a focus on class subjects, were provided in the same universities (Knight, 2002; Neely and Sullivan, 2006; Sharma, 2006) and college (Flaspohler, 2003) noted above.

Assessment Methods

In addition to identifying the type of ILI, there are various assessment methods

available for evaluating the ILI experience. A very complete list of publicly available assessment questionnaires and tests has been compiled by Neely in her recent book (2006a). Another excellent source of assessment techniques is provided in a recent book on ILI assessment for academic librarians (Radcliff et al., 2007). This book also provides advice about choosing an assessment tool. When reviewing these different instruments, it is important to carefully evaluate their usefulness. While there are many choices of assessment techniques, several of these are developed locally by colleges and universities and they are not valid or reliable and do not truly measure students' IL behavior (Rockman and Smith, 2005). Suggestions for how to develop a local assessment instrument have also been provided in Neely's book (2006b). Williams (2000) provides a number of tips for developing test items and how to relate them to the ACRL competency standards. However, two examples of standardized tests developed recently may provide an easier solution: (a) SAILS and (b) iSkills (Neely, 2006b; Rockman and Smith, 2005). Other assessment techniques that are not as common as the survey questionnaires or standardized tests involve students providing written evidence or observable behaviors of their understanding of IL concepts. The five ILI assessment techniques reviewed here are: (a) survey questionnaires, (b) standardized tests, (c) portfolios, (d) essays, and (e) hands-on activity observations.

Probably the most common example of an ILI assessment technique is the use of survey questionnaire instruments, using multiple-choice, fill-in, or matching questions (Dunn, 2002). Often these are static tests of knowledge and do not measure if the student can apply IL concepts to a "real-life" situation (Dunn, 2002; Sonley et al., 2007).

However, they are fairly easy to administer and can provide some useful data. One example of this technique was a survey developed at a university to measure first-year college students' IL skills (Ferguson et al., 2006). The questions were based on the ACRL competency standards (ACRL, 2000) and included a mixture of self-assessment and opinion questions, as well as questions to measure the knowledge of basic library search tools. In another example, a college library used a survey questionnaire previously developed at U.C.L.A. to assess its expanded ILI classroom sessions (Flaspohler, 2003). The questions included students' self-assessment of their IL skills and the U.C.L.A. measures of specific IL competencies. The questionnaire was administered to control groups and to the experimental groups that had attended the ILI sessions. A common result found in many studies was also found here, in which all the students expressed a much higher confidence in their IL skills than they demonstrated in the measurements of those skills (Flaspohler, 2003).

Two different university libraries developed their own assessment instruments to measure tutorials that taught ILI concepts (Dent, 2003; Lindsay et al., 2006). In each case, a questionnaire was used to test how well the students had learned the concepts. As noted previously, the students had an undeserved confidence in their IL skills, when compared to their actual IL assessment test scores. An example of using a pre-test assessment was the use of a questionnaire as a pre-test measure of the level of IL skills of incoming first-year students. The results showed that a significant predictor of the level of IL skills was how many library research assignments the students had been given before taking the test (Kunkel et al., 1996). This was not that surprising, but the data also

provided justification for developing an ILI program. Finally, a different type of assessment questionnaire was used that included descriptions of six scenarios corresponding to core IL competencies (Dunn, 2002). The students were asked to read the scenarios that dealt with an information research situation and provide answers to a breadth question and a depth question about how they would meet the information need and how they would use the information selected. It was felt that the use of scenarios provided a better measure of the students' ability to apply IL concepts to a realistic situation.

A special example of a questionnaire is the development of questions for standardized tests to assess ILI effectiveness. One example of a standardized test to assess ILI programs is known as SAILS (Standardized Assessment of Information Literacy Skills) (Blixrud, 2003). Development of this test for undergraduate college students was begun in 1998 by librarians at Kent State University, after they could not find any useful tests available. The test items are based on the ACRL standards of IL (ACRL, 2000). The librarians received a three-year grant in 2002 from the Institute of Museum and Library Services (IMLS) to continue development of the SAILS test along with using it at other colleges. The Association of Research Libraries (ARL) has endorsed SAILS and is responsible for coordinating the participation of institutions that wish to find out more about SAILS or use it at their schools. Seven universities participated in the initial testing in 2003, including San Jose State University. The production version of the SAILS test was completed in 2006 (Project SAILS, 2008). There is both a paper version and a web-based version of the test, for which institutions

pay a fee based on the number of students tested. However, one university that participated in the early development of SAILS found that it desired measures of more "real-life" IL behaviors to determine how well students can actually apply the concepts measured by SAILS (Sharma, 2006). The development of another new standardized test seemed to meet this need and deserved further consideration.

This second example of a standardized test is the iSkills assessment test developed by the Educational Testing Service (ETS). It was developed with the cooperation of seven very large university systems in the country, including the California State University system and the California Community College System (Egan and Katz, 2007). This test was originally named the ICT Literacy Assessment, in which ICT stands for Information and Communication Technology (ICT). It covers "cognitive problem-solving and critical thinking skills associated with using technology to manipulate information" (p. 37). In order to do this, the test items extended the usual format to include more than the typical multiple-choice items. Students are required to perform various IL-related research tasks in a simulated environment on a computer and the results are automatically scored. The finished version of iSkills is in two sections: (a) Core Level, designed for high school seniors or college freshmen with less complex tasks and (b) Advanced, designed for graduates of a two-year college program or students entering their junior year (Egan and Katz, 2007). Both versions were first administered in the spring of 2006. Colleges have used the test for a variety of purposes, including an evaluation of students' IL skills and the evaluation of ILI programs (Egan and Katz, 2007). Both versions of the test together consist of 15 tasks requiring about 75 minutes

and there is a charge per student, depending on how many student tests are ordered (ETS, 2008).

Standardized measures of IL skills and knowledge may show how well the student understands the theory of how to do research, but this is not the same as the student actually demonstrating this understanding by actually doing the research (Sonley et al., 2007). Both of these standardized assessment tests are subject to this criticism, but they are more practical than some of the other assessment techniques available— especially for administering to a large number of students.

Alternatives to traditional assessment methods have also been used. One such technique for measuring ILI is the use of research portfolios. A large research university has general education graduation guidelines that include IL (Sharma, 2006), demonstrating competencies based on the ACRL IL standards (ACRL, 2000). Its ILI program includes a multitude of methods, including in-person, workshops, and online tutorials. The library decided to create a class that provided an opportunity to teach ILI concepts based on the ACRL IL standards that support research by undergraduate students. Included in the planning for this class was determining the type of assessment to be used. The librarians decided to focus on authentic assessment—which requires students to perform significant mental tasks requiring high-order thinking (Sharma, 2006). This type of assessment includes complex problem-solving over time, with interaction between the student and teacher and the chance for the student to change his/her work. Of the techniques associated with authentic assessment, this library chose to use portfolio assessment. At the end of the course, the students had created portfolios

showing what the students had learned about the research process and how they had pursued their research. The results were evaluated with specific feedback on each section of the portfolio and comments for the student. The teaching and assessment were time-consuming, but worthwhile in meeting the objectives of measuring actual work related to each of the standards established beforehand. The students provided positive feedback about the experience as well and the library plans to continue this program every semester (Sharma, 2006). Another example of the use of portfolios to support authentic assessment was reported by another large university as part of an undergraduate honors program (Snavely and Wright, 2003). The library offered a class to support the research activities of the honors students, although other students could also enroll in the class. As in the previous example, the portfolio as an assessment technique seemed well-suited for measuring the success of the ILI in terms of the student learning outcomes developed for this class (Snavely and Wright, 2003). The original portfolio and its revised contents were evaluated by the librarian and the faculty and it proved very effective. The library plans to continue using it in future offerings of this class and highly recommends it as an assessment technique for research projects.

One more example of using the portfolio technique was that of a large university that revised its existing ILI module that covered the research process (Sonley et al., 2007). As has been discussed previously, standardized measures of IL skills and knowledge may show how well the student understands the theory of how to do research, but this is not the same as the student actually demonstrating this understanding by doing the research. An advantage of the portfolio technique is that the student actually shows

what has been learned during the course of the instruction by providing examples of research products over time. Thus, the university revised its ILI module to incorporate the portfolio assessment technique and it was effective for this first experiment. It plans to continue to use it in the future (Sonley et al., 2007).

The use of written essays for assessment is another non-traditional method. An experiment in ILI was conducted by classroom teachers at a small college to see if minimal instruction in the classroom would be effective in students learning specific IL outcomes (Larkin and Pines, 2004). The experimental group was given instruction in various aspects of the research process, using written handouts, and the students were encouraged to get assistance from the reference librarians. The students needed to locate electronic databases and perform online searches to get journal articles on an assigned topic, and then report on what they had learned. The control group of students was not exposed to this ILI experience. Then both groups were asked to write up an essay with their plan for conducting library research on a debate topic. The also had to describe how they would evaluate and choose which results to use as background for the debate topic. The essays were graded on how well they demonstrated an understanding of the research process, with an experienced college librarian performing a blind rating of each essay. The experimental group was assigned significantly higher ratings, lending support to the conclusion that this minimal ILI experience did lead to more significant learning of IL concepts (Larkin and Pines, 2004).

Another example of using a written essay for assessment of IL concepts was conducted at a large university (Nutefall, 2005). The university had adopted IL

competency standards that had to be satisfied by all students. In this case, the library developed a new three-week course for teaching IL to all students at different times during the semester. A qualitative assessment of the ILI taught during this course was done using an essay method named the Paper Trail assignment. The students had to complete six different IL tasks during the class. The final task was the Paper Trail essay, in which they described the research process they carried out in support of giving a speech that was also required in the class. The students were asked to reflect on which steps in the research process were successful, which failed, and what they would do differently. Using specific criteria for grading the essays, librarians measured how well the students achieved the desired learning outcomes. The results were used to revise the ILI course and better qualitative results were observed the next time it was taught.

Summary

This review of the literature provided examples of the in-person type of ILI using multiple sessions of instruction, as this is the type studied in this research. Further, examples of five different assessment methods were reviewed. The survey method and the essay method are those investigated in this research. While studies of individual assessment methods have been done, the comparison of different methods with the same sample of students has not been reported in the literature. This research study provides an opportunity to compare and evaluate different methods as to their reliability and usefulness. Chapter 3 presents the methodology that was used in this research study.

Chapter 3: Methodology

Problem for Investigation

The problem of interest for this research investigation is how to measure the success of information literacy instruction (ILI) for undergraduate college students. There are many possible assessment methods in use, but it is not clear which are more effective nor if there is consistency in results between the different methods. Also, it is important to differentiate between student outcome measures and student learning outcomes measures. Student outcome measures show how many students were exposed to different ILI techniques. Student learning outcomes measures indicate what students learned—what do they know and what skills do they have as a result of the ILI (Hernon & Dugan, 2004). For this research study, three different methods of student learning outcome assessment of interest were used in ILI classes taught to first-year students at a large university: a) an objective questionnaire administered at the start of the ILI classes and at the end of the classes (pre- and post-test); b) a reflective essay written by the student at the end of the classes; and c) a hands-on experiential final in which students performed a brief research task and described the steps involved, as well as the research results found. At least two of these three methods are routinely used by librarian faculty at the California State University East Bay (CSUEB) campus in teaching a required 2-unit IL class to all first-year students. The data from five sections of this class taught in the fall quarter, 2008, were analyzed to determine both absolute measures of IL knowledge and skills, as well as any consistency of results across the different methods, within each class. This analysis provided an estimate of how well the ILI is succeeding

and also identified any differences in results based on the type of assessment method used.

Population

The classes ranged from 20 to 25 students each, yielding approximately 100 to 125 students in total for the 5 class sections from which data was collected. The graduation requirement to complete the ILI class is for freshman students and the class is typically completed in the first-year, although some students may defer and take it later, so it is possible that a few of the students may not be first-year students. Only sections of the class in which the librarian teacher used the pre-/post-questionnaire and at least one of the other methods (the reflective essay and the experiential research task final) were selected for study.

Assessment Methods

In order to compare different assessment methods, it was required that the students complete the pre-/post-test questionnaire and at least one of the other methods of interest: the reflective essay and the experiential final. It was decided to require the pre-/post-test questionnaire so that it was available for comparison to questionnaire data from previous years also. The decision to require only one of the other methods, and not both, was necessary so that a reasonable sample of data could be collected, as very few classes used all three methods.

Pre-/Post-test questionnaire. The pre-/post-test questionnaire was given to the students at the start of the class and again at the end of the class. It consisted of 20 multiple-choice questions covering different aspects of information literacy knowledge. The actual test questionnaire used (CSUEB, 2004) is provided in Appendix A. This same test was used in the ILI classes for the four previous academic years of 2004-2008 and this data was also included in the analysis.

Reflective essay. A reflective essay was collected at the end of the class, often as part of a portfolio of all of a student's work completed during the class. The student was to address each of the course objectives listed in the course syllabus and measure his/her own progress toward achieving them. It was also suggested that the student include references to assignments in the portfolio to support the student's self-evaluation. An example of the instructions for the reflective essay is given in Appendix B.

Experiential final. An experiential final was given on the last day of class, in which the student was given a topic at random and asked to use the library to search for information about this topic for about an hour. Then the student returned to the classroom and used the second hour to write about the topic using the information that was found. The student was also to include a description of the process used to find the information and document the sources used. An example of the instructions for an experiential final is provided in Appendix C.

Procedure

The author contacted each of the librarian instructors of the ILI class at the start of the quarter to determine if they would be using the pre-/post-test questionnaire and at least one of the other assessment methods of interest (reflective essay, experiential final) in the class. For those who indicated they would be doing so, they were asked if they would be willing to provide this data at the end of the quarter to the author for use in this thesis research study. The pre-/post-test questionnaire score results were compiled for each class section and provided as summary data to the author. The author collected copies of the other two assessment instruments for each of the class sections with the student names removed, so that anonymity was preserved. Only the class section was identified so that all the data from a class section could be compared. The graded score for each student was indicated and the rubric used for grading by the teacher was also provided. The data was aggregated for each class section and summary results compared for each of the types of assessment used.

Several different types of analysis were carried out. First, the absolute scores for the pre-/post-test questionnaires were examined to look for consistency across classes, as well as the level of IL knowledge and skills demonstrated. Also, the difference between average pre-/post-test scores was reviewed, looking for possible gains on the post-test. Both individual questions and summary total score data were analyzed. Next, the instructors' rubrics used for grading the reflective essays and the experiential final were reviewed to understand how the scores on each of these assessment instruments were assigned. The actual scores for each measurement were examined to see how well the

students demonstrated IL skills and knowledge. Samples of each instrument were also reviewed to get a qualitative view of the type of answers provided by the students. Also, the final scores for each of the three measures (the questionnaire, the essay, and the final exam) were compared to see if the results show consistent levels of achievement or not for each class. Finally, as there is questionnaire data available from these classes for four previous years, summary results for all five years were examined to look for trends in students' scores over this period. The results of this analysis are provided in Chapter 4.

Institutional Review Board (IRB) Approval

It was anticipated that the need for human subject review board approvals would be exempt, since the data was already being collected by the instructors as part of the classroom experience and the students' identification was removed from the data on the copies provided for analysis. The author submitted the application for such approval/exemption of this research to the IRB committees at both California State University East Bay (CSUEB) and then at San Jose State University (SJSU), as part of the required process for conducting research at SJSU. Approval was received from both IRBs before any data was collected for this research. The IRB approval forms are provided in Appendix D.

Chapter 4: Results

Analysis of the different assessment data for the ILI classes was done within each

section of the library class and not across classes. This was done because variations were

likely to be introduced in each class because of the different teaching styles and the

characteristics of the students in the classes. In making comparisons between assessment

methods, it seemed reasonable to limit the comparison to only students in a given class,

where the students and teacher were constant. In the following discussion, the results are

presented separately for the two sets of data examined in this research: (a) the fall quarter

of 2008 and (b) the historical data for the four academic years 2004-2008.

Fall Quarter, 2008

Comparison of assessment methods. One of the goals of this research was to look

for consistency among the three different assessment methods used in the same ILI

classroom. For all five classrooms, the pre-/post-test questionnaire and the reflective

essay were used, and in two the experiential final exam was also used. The results of the

three methods are presented in

Table 1 for each of the five classrooms. Differences in scores between the methods are

also shown. The post-test questionnaire score, the essay score, and the final exam score

all were given at the end of the class and provided different measures of how much the

students learned as a result of the ILI.

Table 1. Comparison of Assessment Method Results by Class Section

Class	Post-test Score	Essay Score	Final Score	Essay – Post	Final – Post	Essay - Final
A	(n=22) 67.05%	(n=22) 84.41%	N/A	+ 17.36% **	N/A	N/A
B	(n=16) 72.81%	(n=22) 91.50%	(n=25) 85.45%	+ 18.69% **	+ 12.64% **	+ 6.05% *
C	(n=18) 63.33%	(n=26) 83.65%	(n=26) 83.88%	+ 20.32% **	+ 20.55% **	- 0.23%
D	(n=19) 62.11%	(n=20) 86.33%	N/A	+ 24.22% **	N/A	N/A
E	(n=25) 71.20%	(n=25) 88.20%	N/A	+20.68% **	N/A	N/A

Note: Significance values are: * $p < .05$. ** $p < .01$.

There was a consistent and significant ($p < .01$) positive difference between the essay score and the post-test questionnaire score in all classes: the essay score was higher. For the two classes with final exams, the final exam score was also significantly higher ($p<.01$) than the post-test questionnaire score. There was a significant difference ($p<.05$) between the essay and the final exam for Class B, but not for Class C, with the essay having the higher score. The consistently significantly higher score levels for both the essay and the final exam suggests that these are more valid measures of student learning than the post-test questionnaire score. There is also evidence that the questionnaire may

not be a reliable measure, as will be discussed later in this section. So, one conclusion from this comparison is that the reflective essay and final exam methods of assessment are more accurate ways to measure student learning in these IL classes.

Pre-/post-test questionnaire. The pre-/post-test questionnaire provided additional data for analysis on its own. For example, how much improvement in IL knowledge occurred could be measured by the differences between the average pre-test and post-test questionnaire scores for all of the students in each class. These differences are presented in Table 2. In only one of the classes was the difference

Table 2. Gains on Pre-test/Post-test Questionnaire

Class	Pre-test Score	Post-test Score	Difference
A	(n=17) 62.65%	(n=22) 67.05%	+ 4.40%
B	(n=25) 57.40%	(n=16) 72.81%	+ 15.41% *
C	(n=26) 58.33%	(n=18) 63.33%	+ 5.00%
D	(n=26) 56.73%	(n=19) 62.11%	+ 5.38%
E	(n=30) 62.00%	(n=25) 71.20%	+ 9.20%

Note: Significance value is: $* p < .05$.

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gain significant (p<.05), which suggests that the questionnaire was not a good measurement tool of learning.

Another item of interest regarding the questionnaire data was whether some of the questions were too easy because students already had the knowledge tested by the question before taking the ILI. In analyzing each of the 20 questions, a threshold of 80% or higher of the students correctly answering the question was applied to the pre-test to identify "easy" questions. If this threshold was reached for a question in the data from at least three class sections, then that question was considered too easy. The actual text of each question is provided in Appendix A. Three of the questions met this criterion for easy questions, as shown in Table 3. In fact, all

Table 3. Identification of "Easy" Questions on Pre-test

Class	A	B	C	D	E
Question #		Pre-test	Scores		
4.	100%	92.00%	85.19%	88.46%	90.00%
13.	94.12%	92.00%	92.59%	88.46%	100%
19.	94.12%	88.00%	88.89%	88.46%	80.00%

five class sections met the 80% or higher threshold for these three questions, so it is likely that these questions were not good pre-test measures on which to base evidence of learning in the class. It is suggested that these questions be replaced with others that are more challenging, if this questionnaire is used in the future. A similar approach was used to analyze the post-test scores to see if there were "difficult" questions that showed very

low scores (20% or lower) on the post-test for at least three classes. There were no questions that met this criterion, however.

It was also of interest to see how well individual questions did to show evidence of learning by looking at the differences between the pre-test and post-test scores for each of the questions. A question that provided evidence of learning was defined as a score increase of 20% or higher between the pre-test and post-test scores in at least three of the class sections. There were four questions that met this criterion, as shown in Table 4.

Table 4. Evidence of Learning for Individual Questions

Class	A	B	C	D	E
Question #	Post-test − Pre-test Score Differences				
6.	18.45%	**53.75%**	**37.04%**	- 2.22%	**22.67%**
12.	**25.67%**	**46.50%**	**38.89%**	**30.97%**	**34.67%**
17.	**30.21%**	**35.00%**	**57.41%**	5.06%	9.33%
18.	**23.26%**	**24.25%**	**25.92%**	**28.14%**	- 10.67%

The cases in which the post-test score showed at least a 20% improvement are highlighted in bold in the table. Of the four questions that met this criterion, question 12 gave the most consistent evidence, as there were 20% or higher increases in all five classes. This question measured the student's understanding of using the Boolean operator "NOT" in searching. It is reasonable that this was a skill that should be learned in the class. The others did not show as consistent a pattern, and there were even some negative differences found. The fact that there were questions that showed negative

differences or "loss of learning" as measured by the difference between the pre- and post-test scores raises doubts about the usefulness of the questionnaire. The number of such questions for each class is shown in Table 5.

Table 5. Number of Questions with Negative Differences on the Post-test.

Class	A	B	C	D	E
No. of "negative questionnaire items	8	3	11	9	5

Several doubts have been raised about how valid the questionnaire data is in providing evidence of student learning in these classes. The pre-test and the post-test did not affect the students' grades and their scores were not associated with their names. Only the number of students in each class who answered each question correctly was recorded. So, the students may not have given the tests full attention and taken them as seriously as they did the other assessment methods that were used to grade them in the class. The fact that many questions showed negative differences between pre-test and post-test scores may be an indicator of this lack of effort, rather than the lack of learning on the skill/knowledge measured by the question. This further suggests that the other assessment methods provided a more accurate measure of student learning.

Reflective essays. The reflective essays by the students were intended to measure how well the students understood the research process and what IL skills they had learned about finding, evaluating, and using information. The teacher's scores for the essays included points for some items that were unrelated to an understanding of the research process and IL skills, however (e.g., minimum length of essay). Since this research is

focused on measuring only these skills, it was decided to rescore the essays using a qualitative measure targeted toward the students' learning of just these concepts. A randomly chosen sample of 25% of the reflective essays was rescored from each class. The sample was reviewed to determine the types of evidence and how many of these were presented by the student. The rescoring procedure consisted of preparing a list of 10 statements that showed an understanding of the research process and IL skills taught in the ILI classes and then counting how many of these were included in each essay. The list of statements that was used is provided in Table 6.

Table 6. Statements Used for Qualitative Rescoring of Sample of Essays

Need to start with a research question
Start with a broad topic and then narrow it
Start with a research plan or strategy and refine it as needed
As you search, decide what to keep and what to reject, and why
Identify websites and search engines as repetitive with lack of credibility
Need to check validity of information and evaluate its credibility
Library databases are more precise and more useful in searching
Use tools to organize search results, such as sorting by relevance
Use Boolean logic or other search techniques to narrow results
Important to cite sources as they are found for use in bibliography list

If the essay included a paraphrase of the statement or the main concept conveyed in the statement, then it was counted. For example when a student wrote that it was necessary

to find two other sources to back up what was found in a source, that was counted as an example of the need to check validity of information and evaluate its credibility. The results of this analysis of the essays are presented in Table 7.

Table 7. Rescored and Original Essay Scores by Class

Class	A	B	C	D	E
Rescored Average for Sample	77%	90%	70%	78%	82%
Teacher's Scores for Sample	84%	93%	85%	91%	92%
Teacher's Scores for All Essays	84%	92%	84%	86%	88%

In addition to the new rescored average that was assigned to the sample of essays in this analysis, the teacher's average score for the same sample of essays is given and also the teacher's scores for the entire set of essays for the class (from Table 1). The teacher's scores were very similar for the sample of essays and for the complete set of class essays, indicating that the sampling was representative. The rescored results were consistently lower than the teacher's scores, but this is probably because the rescoring excluded the parts of the teacher's scores that were given for factors unrelated to the IL learning of interest for this research. However, even these lower scores were still consistently higher than the corresponding post-test questionnaire scores (see Table 1). Thus, the use of reflective essays appears to be a more accurate method for assessing student learning in these ILI classes.

Experiential final exams. The experiential final exam was another assessment method designed to measure student learning of IL skills by having the student actually

perform an information searching task and write up the results. It was assumed that this was a more accurate measure of what had been learned in the class than the post-test questionnaire because the student was required to demonstrate it by applying the skills and knowledge to an actual mini-research task. The task consisted of finding and citing three types of sources that could be used to write a research paper on a specific topic assigned to the student. The instructions emphasized the following: (a) one source was to be a book that was very focused on the topic and to give the title and call number, (b) a second source was to be a scholarly journal article found in the library's electronic databases with the topic in the article's title or subject heading and to give the article title, the journal title, its date, and the database used, and (c) a third source that was a reliable website and to print out the first page of the website. The first two sources were reviewed for all of the final exams in the two classes, as the website pages were not available.

A majority of the students performed the task well and provided the desired information. Almost all of the students provided a book title focused on the topic. However, about 25% of the students had some difficulties with finding an appropriate journal article for the topic. The problems encountered ranged from being off-topic or not specific enough, to choosing non-scholarly articles (book reviews, newspaper stories, news magazines), or not identifying the journal title correctly. While this type of final did provide some measurement of learning, it would have been more complete if the student were also required to describe the process used in finding and evaluating the information—as was done in the reflective essays.

Historical Data for 2004-2008

The pre-/post-test questionnaire with the same 20 questions has been given to

students in the Liby 1210 IL class for the academic years 2004-2005 through 2007-2008,

in each of the fall, winter, and spring quarters. Although there is some doubt about the

validity of this questionnaire, it was felt that it would be interesting to see if similar

results to those found for fall, 2008 were shown or not. So, the fall data for each year

was examined to look for similarities. The same analysis approach was taken for this

data as was used for the questionnaire data of the fall quarter, 2008: (a) Post-test score

(b) Differences between pre- and post-test scores, and (c) Identification of easy questions.

The pre- and post-test scores for classes and difference scores for classes in the

fall quarter of each academic year are provided in Tables 8 through 11.

Table 8. Questionnaire Scores for Fall, 2004

	Pre-test	Post-test	Difference
Class #			
1	54.82	64.50	+ 9.68
2	62.74	67.27	+ 4.53
3	61.67	65.53	+ 3.86
4	60.69	74.58	+ 13.89
5	54.44	66.60	+ 12.16
6	58.33	68.95	+ 10.62
7	60.24	72.62	+ 12.38

	Pre-test	Post-test	Difference
Class #			
8	60.93	74.26	+ 13.33
9	60.22	75.83	+ 15.61
10	58.27	65.87	+ 7.60
11	62.96	77.31	+ 14.35

Table 9. Questionnaire Scores for Fall, 2005

	Pre-test	Post-test	Difference
Class #			
1	65.56	74.62	+ 9.06
2	62.76	67.61	+ 4.85
3	60.80	74.05	+ 13.25
4	65.18	72.40	+ 7.22
5	67.33	77.69	+ 10.36
6	56.94	70.00	+ 13.06
7	58.64	67.50	+ 8.86
9	66.00	78.93	+ 12.93
10	68.21	80.63	+ 12.42
11	60.79	70.83	+ 10.04

Table 10. Questionnaire Scores for Fall, 2006

	Pre-test	Post-test	Difference
Class #			
1	54.75	60.88	+ 6.13
2	59.31	71.80	+ 12.49
3	63.54	68.57	+ 5.03
4	65.89	70.96	+ 5.07
7	57.89	66.11	+ 8.22
9	61.38	70.38	+ 9.00
10	52.74	71.67	+ 18.93
11	63.65	72.93	+ 9.28

Table 11. Questionnaire Scores for Fall, 2007

	Pre-test	Post-test	Difference
Class #			
1	62.00	72.37	+ 10.37
3	61.67	66.82	+ 5.15
4	58.21	73.60	+ 15.39
8	54.82	61.96	+ 7.14
9	57.41	71.43	+ 14.02
10	53.10	63.95	+ 10.85
15	60.43	72.31	+ 11.88

It is unlikely that very many, if any, of these differences are significant, which is consistent with the data for the fall quarter of 2008 (see Table 2). Comparison of the ranges for each year and those for the fall, 2008 (from Table 2) are presented in Table 12.

Table 12. Comparison of Ranges of Data for Fall of 2004-2008

	Pre-test	Post-test	Difference
Fall, 2004	54.44 – 62.96	64.50 – 77.31	3.86 – 15.61
Fall, 2005	56.94 – 68.21	67.50 – 80.63	4.85 – 13.25
Fall, 2006	52.74 – 65.89	60.88 – 72.93	5.03 – 18.93
Fall, 2007	53.10 – 62.00	61.96 – 73.60	5.15 – 15.39
Fall, 2008	56.73 – 62.65	62.11 – 72.81	4.40 – 15.41

Looking at the post-test scores first, it is interesting to note that the range of post-test questionnaire scores in the fall of each academic year are very similar. With no trend in increasing post-test values over the years, there is no evidence of increasing learning as measured by the questionnaire. The range of pre-test scores did not seem to increase consistently either, and this lack of a trend does not provide evidence that students coming to the university had been provided with more IL skills/knowledge over this period. Finally, the range of difference scores did not seem to change very much either. Table 13 presents the median values for the range data in each column of Table 12 and, as expected, the data is similar with no patterns of change evident here either.

Table 13. Comparison of Median Values of Data from Table 12

	Pre-test	Post-test	Difference
Fall, 2004	60.24	68.95	12.16
Fall, 2005	63.97	73.23	10.20
Fall, 2006	60.34	70.67	8.61
Fall, 2007	58.21	71.43	10.85
Fall, 2008	58.33	67.05	5.38

An analysis of the scores for the "easy" questions (4, 13, 19) identified in the fall, 2008 data did show similar results for the previous four years. Almost all of the class sections in each of the four years met the threshold of 80% or higher on the pretest for these questions, with only two of eight sections not meeting it in 2006 for question 4 and one of seven sections in 2007. In 2007, only one of seven sections did not meet the 80% threshold for question 19. In each of these cases, the score was more than 70% correct on

the pretest. Clearly, there is a very consistent pattern showing that these three questions have been too easy since their use starting in 2004.

The analysis of the historical questionnaire data for the academic years 2004-2008 did not reveal any significant trends in student IL pre-university preparation or post-IL class learning. This provides additional support for doubting the value of using the questionnaire as a useful assessment of the success of the ILI classes.

Chapter 5: Conclusion

The analysis of the results indicated that the pre-/post-test questionnaire was not a reliable method for assessing student learning from ILI classes. The comparison of pre- and post-test scores within each class failed to show significant gains in four of the five classes. Also, when analyzing individual question results, there were a number of questions that actually showed lower scores on the post-test. This further raises doubts about the usefulness and reliability of this questionnaire as an assessment method.

The reflective essay scores were significantly higher than the post-test questionnaire scores for all five classes, suggesting that the reflective essay method was a more valid assessment method of student learning. The experiential final exam scores were also significantly higher than the post-test questionnaire scores for the two classes in which both methods were used. It appears that this final exam method is also a better assessment method. For the two classes in which both the essay and final exam methods were used, one showed significantly higher scores for the essay, but the other class did not. The use of the reflective essay and experiential final exam methods as more reliable assessment methods of ILI was supported by these results.

The analysis of the historical data for the fall quarters of the four years of 2004-2007 was conducted to look for possible trends in student learning over this period. The results did not indicate any such trends, as the ranges of pre-test and post-test scores did not vary significantly and they were similar to what was found for the fall quarter data for 2008. Further, the pre-test scores themselves did not change significantly over the years, which suggests that students coming to the university were not better prepared with IL

skills and knowledge when they arrived. There was one consistent pattern that matched what was found for the fall, 2008 data. Three questionnaire items had been identified as "easy" questions in the fall, 2008 data, with scores of 80% or higher on the pre-test. These same results were found for these items in the historical data, suggesting that these questions should be replaced with more challenging items.

The results of this research indicated that the reflective essay and experiential final exam methods provide reliable assessments of student learning in ILI classes, while the objective questionnaire method's usefulness is doubtful. Further research should examine additional examples of using the first two methods to look for consistent patterns of success with more ILI classes of students.

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LIBRARY 1210 PRE-POST TEST[1]

Choose the answer that seems the best to you and write the corresponding letter on the line in the left-hand column.

_____1 You are doing research on crime statistics in Alameda County for the last year. Which aspect of the information you find is most important to your research?
   a. the point of view of your information source
   b. if the source covers the correct time frame
   c. the format of your information source
   d. the size of the print type

_____2 You are writing a research paper on gun control. If your search strategy is to start with a broad overview and then narrow your topic, in which order would you look at these sources?
   a. First encyclopedias, then books, and then research articles
   b. First books, then research articles, and then encyclopedias,
   c. First research articles, then books, and then encyclopedias
   d. First research articles, then encyclopedias, and then books

_____3 Which question is broader than the example?
   Example :   _What would be the result of legalizing marijuana?_
   a. What are the medical arguments for legalizing marijuana?
   b. What might be the impact on society if drugs were legalized?
   c. Are there any industrial uses for marijuana if it were legalized?
   d. Would more teenagers smoke pot if it were legalized?

_____4 You are writing a paper on the "hunting of mountain lions in California." What keywords would you use to start your research?
   a. lions and environment and Oregon
   b. mountain lions and hunting and California
   c. hunting and environment and California
   d. cats and California and environment

_____5 You are writing a paper on medical marijuana. Is the viewpoint of the author of information you find on this subject important?
   a. Yes
   b. No

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c. Don't Know

_____6 Most of the books in an academic library are arranged by Library of
          Congress call numbers; these call numbers indicate the main subject of the
          book.
          a. True
          b. False
          c. Don't know

_____7 The best way to find out **quickly** what a book is about is to:
          a. look at the footnotes
          b. read the book
          c. scan the Table of Contents

_____8 A database that uses a standard list of terms to describe articles is:
          a. a controlled vocabulary database
          b. an uncontrolled vocabulary database
          c. a truncation database
          d. a cross-field searching database

_____9 The advantage of a free-text search tool (such as Google) is the guarantee
          that all results will be relevant to your search topic.
          a. True
          b. False
          c. Don't know

_____10 All information on the web is:
          a. organized by date
          b. unorganized, in general
          c. organized by subject
          d. organized by the government

_____11 Linking your search terms by which command (Boolean operator) will tell
          the computer to narrow your search to include all terms?
          a. OR
          b. AND
          c. NOT
          d. MAYBE

_____12 The search **soda NOT diet** would find the article, "Too Much Soda is Not
          Good for Your Diet."
          a. True
          b. False

c. Don't Know

_____13 You are citing an article in the bibliography of your paper. Which of the following should you NOT include?
a. author
b. article title
c. pages
d. color of the cover
e. magazine title

_____14 Generally, scientific research requires very up-to-date information. This is not necessarily true for humanities research.
a. true
b. false
c. don't know

_____15 A news report on television that presents only one side of the story would be considered.
a. subjective
b. subjunctive
c. accessible
d. objective

_____16 **Primary** and **secondary** sources of information are:
a. identified in exactly the same way by all disciplines.
b. the same thing.
c. identified in different ways by different disciplines.
d. synonyms for popular and scholarly sources.

_____17 You are writing a paper on the California Gold Rush and need one primary source. Which of the following would you choose?
a. an encyclopedia article on the Gold Rush
b. a journal article about the Gold Rush
c. a diary written by a gold miner during the Gold Rush
d. a bibliography of articles about the Gold Rush

_____18 The following:
Carerras, R. (1999). Play therapy for autistic infants. <u>Human Development</u> 32, 86-95.
is a citation for which kind of resource?
a. a book
b. a newspaper article
c. a journal article

d. a chapter in a book

_____19   Using a portion of someone else's work without crediting them as the author is called:
  a. trademark infringement
  b. creator's waiver
  c. fair use
  d. plagiarism

_____20   The term *public domain* means:
  a. the information can be freely copied or used by anyone without permission
  b. land owned by the government
  c. the information is free but cannot be copied or published
  d. .pub

Appendix B – Example of Reflective Essay

Reflective Self-Assessment Essay[2]

This essay should address each of the course objectives listed in the syllabus and your own assessment of your progress toward achieving them. You will probably want to mention various items or assignments in your portfolio to illustrate your comments. This essay should not be long; however, it does need to be thoughtful and reflective.

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Appendix C – Example of Experiential Final Exam

Final[3]

Your task is to find out as much as you can about the person whose name you will draw and write up you findings. You will have 50 minutes to do your research and 50 minutes to write up your results—if it takes you that long.

Plan your search strategically, considering **where** (what types of sources) you might be the most likely to find particular information you need. **Include this strategy in your notes**.

Take notes as you go along, documenting your sources carefully so you can refer to them as you write. **You will need to document the sources in your write-up where you found specific pieces of information relating to your person.** (Documentation for this final includes listing the title and author and call number for any print sources; the author, article title, & journal title, date, volume, and pages for any articles, plus the database used for any online articles; the title, author and URL for any websites; and the names of any other online sources you used. You do not need to use MLA format.).

You may use any notes or handouts we used in class; you may NOT ask a librarian or each other for help.

NOTE: You might find the attached grading rubric helpful in determining your approach and treatment of this topic.

Your final report should address the following questions:

Who is this person? Why is he or she famous/important?

What are some important <u>personal</u> aspects of your person's life? (Family, gender, health, etc.) How do you think they influenced him/her?

When, where, and under what conditions did this person <u>live and work</u>? What are some aspects of the environment/time period/culture that might have influenced him or her to become the person he or she was?

Anything else you consider relevant...

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[3] Reprinted with permission from K. Ramsdell, Librarian, California State University East Bay.

NOTES -- Don't forget to include your <u>research strategy/plan</u> and be sure to document your sources. Documentation should include: **For Books--author, title, and copyright date.**

                                        For articles--author, article title, journal title, date and pages.

                                        For web sites--author, title, URL

SEARCH STRATEGY/PLAN:

NOTES:

REPORT (Be sure to write the name of the person you are researching below.)

Name:_____

Grading Rubric

	Marginally acceptable	Good	Excellent
Depth of Information	Basic information about the person	Basic information plus a few interesting details	Detailed, in-depth information
Quality of Information	Sources appear to be reliable—little evaluative comment	Most sources are reliable and credible—some evaluation	All sources are reliable and credible—evidence of evaluation
Variety of Sources	Several sources used of different types	A larger number of varied sources used	A wide variety of print and online resources used
Documentation/Citation	Some sources cited; some sources cited correctly	All sources cited; most cited correctly	All sources cited clearly and accurately
Search Strategy	Logical; some appropriate options considered	Logical; many appropriate options considered	Logical; all appropriate, practical options considered

Appendix D – Institutional Review Board (IRB) Forms

To: David Gross

From: Pamela Stacks, Ph.D.
        Associate Vice President
        Graduate Studies and Research

Date: November 25 2008

The Human Subjects-Institutional Review Board has registered your study entitled:

"Assessment of Information Literacy Instruction"

This registration, which provides exempt status under Exemption Category 1, of SJSU Policy S08-7, is contingent upon the subjects included in your research project being appropriately protected from risk. This includes the protection of the anonymity of the subjects' identity when they participate in your research project, and with regard to all data that may be collected from the subjects. The approval includes continued monitoring of your research by the Board to assure that the subjects are being adequately and properly protected from such risks. If at any time a subject becomes injured or complains of injury, you must notify Dr. Pamela Stacks, Ph.D. immediately. Injury includes but is not limited to bodily harm, psychological trauma, and release of potentially damaging personal information. This approval for the human subject's portion of your project is in effect for one year, and data collection beyond November 25, 2009 requires an extension request.

Please also be advised that all subjects need to be fully informed and aware that their participation in your research project is voluntary, and that he or she may withdraw from the project at any time. Further, a subject's participation, refusal to participate, or withdrawal will not affect any services that the subject is receiving or will receive at the institution in which the research is being conducted.

If you have any questions, please contact me at (408) 924-2480.

Protocol # S0804138

cc. James Schmidt, 0029

INSTITUTIONAL REVIEW BOARD
NOTICE OF ACTION

☐ **Approval by:**   ☒ **Initial Review**
    ○ **Full Board Review**   ☐ **Continuation Review**
    ○ **Expedited Review**   ☐ **Modification Review**
☒ **Project is Exempt**   ☐ **Adverse Reaction**
    from IRB Review
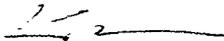   (45 CFR 46.101(b).2&4)

Project title: Assessment of Information Literacy Instruction

Principal Investigator: David Gross

Date of Action: 11-02-2008   Expiration Date: 11-02-2009

The above Action applies only to the protocol submitted. Any changes in the content or procedures of this research must be submitted to the Institutional Review Board for review and approval.

Signature _____   Date _____11-2-08_____

Name: Kevin Brown, Ph.D.
Title: Chair, Institutional Review Board
Address: California State University, East Bay
               Hayward, California 94542-3008

Telephone: (510) 885-4212
FAX: (510) 885-4618
E-Mail: kevin.brown@csueastbay.edu

☐ Please see attached comments
cc: Doug Highsmith, CSUEB Faculty Advisor
    CSUEB Library