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Are students ready for post-secondary research?

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Abstract

According to faculty interviews, entering college freshmen frequently did not exhibit consistent knowledge of information literacy skills needed to be successful. Schools have increasingly used models of team teaching between librarians and professors to ensure students have information literacy skills. The purpose of this study was to explore the expectations and deficiencies in information literacy skills of entering college freshmen. The researcher questioned professors about (1) what skills they expected college freshmen to have, (2) students dispositions and responsibilities, (3) research inadequacies of students, and (4) the effect they felt using embedded librarians would have in other college departments. The researcher interviewed four professors from Intersections courses at a small midwestern liberal arts college. A predominant deficiency that faculty identified in first-semester college freshmen was that students had difficulty accepting multiple-perspective information when doing research. Overall they reported that students had a basic understanding of simple research questioning and thesis formation, but they lacked practice and confidence in forming complex ideas in research. Faculty stated that students had a tendency to select quick answers without evaluating sources, and they were unable to recognize useful information in a biased source. According to these faculty, students were comfortable using technology but were surprised by a lack of validity of online sources. They asserted that students had difficulty using periodical databases and knowing where to look for good Internet sources. By embedding a librarian, teachers could assume that students would learn how to do research. The librarian tailored lessons to be practical and tied to assignments. By teaching the Intersections classes, professors were able to see students transfer knowledge to other classes. These professors saw secondary education as a place where this type of an embedded program would have a favorable effect on students' research skills prior to college.

ARE STUDENTS READY FOR POST-SECONDARY RESEARCH?

A Graduate Research Paper
Submitted to the
Division of School Library Studies
Department of Curriculum and Instruction
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By
Paula Winward
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Titled: Are Students Ready for Post-Secondary Research

has been approved as meeting the research requirement for the
Degree of Master of Arts.

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ABSTRACT

According to faculty interviews, entering college freshmen frequently did not exhibit consistent knowledge of information literacy skills needed to be successful. Schools have increasingly used models of team teaching between librarians and professors to ensure students have information literacy skills. The purpose of this study was to explore the expectations and deficiencies in information literacy skills of entering college freshmen. The researcher questioned professors about (1) what skills they expected college freshmen to have, (2) students' dispositions and responsibilities, (3) research inadequacies of students, and (4) the effect they felt using embedded librarians would have in other college departments. The researcher interviewed four professors from Intersections courses at a small midwestern liberal arts college.

A predominant deficiency that faculty identified in first-semester college freshmen was that students had difficulty accepting multiple-perspective information when doing research. Overall they reported that students had a basic understanding of simple research questioning and thesis formation, but they lacked practice and confidence in forming complex ideas in research. Faculty stated that students had a tendency to select quick answers without evaluating sources, and they were unable to recognize useful information in a biased source. According to these faculty, students were comfortable using technology but were surprised by a lack of validity of online sources. They asserted that students had difficulty using periodical databases and knowing where to look for good Internet sources. By embedding a librarian, teachers could assume that

students would learn how to do research. The librarian tailored lessons to be practical and tied to assignments. By teaching the Intersections classes, professors were able to see students transfer knowledge to other classes. These professors saw secondary education as a place where this type of an embedded program would have a favorable effect on students' research skills prior to college.

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CHAPTER!

INTRODUCTION

Over the past decade, there has been an emphasis on more communication and sharing of knowledge between secondary and post-secondary librarians. On a personal note, my husband, an academic librarian and I, a teacher librarian, have each taught information literacy skills, focusing on what students should know when transitioning from secondary education to post-secondary life. Team teaching in college freshmen introductory classes has caused the questions to become more imperative to our positions as a teacher librarian and college librarian preparing students during transitional stages in their education.

Justification

According to Donham (2003), college faculty expected students to be able to focus a topic, compose a thesis statement, support an argument and evaluate information. Teaching sixth graders in information literacy classes, I expected them to be able to do the same with some guidance. A substantial amount of growth should have taken place between sixth graders and college freshmen.

In the past, information literacy instruction was often invitational and contained within the library in frequently generic one-shot sessions. However, in recent years academic librarians became increasingly integral and proactive partners in classroom instruction and most reference librarians became experts in the information literacy programs of the college (Gremmels & Lehmann, 2007). In 2003, a midwestern liberal arts college implemented information literacy instruction in its mandatory course for all

freshmen: the "Intersections" interdisciplinary seminar focused on issues-based themes that develop skills in college-level reading, writing, listening, speaking, critical thinking and information literacy. Intersections information literacy instruction was primarily developed in a co-teaching model wherein course reading and writing assignments were developed and presented by the course professor and complementary information literacy instruction and exercises were developed and presented by the course section librarian partner.

Islam and Murno (2006) found that 81% of secondary librarians felt that their students were able to effectively select sources, but 58% of those felt that students could not construct a viable search query; 79% of students could avoid plagiarism and use citations, but didn't know how to analyze information found. The researchers recommended that preservice teachers offer information literacy courses, those courses be taught by academic librarians, and that first-semester freshmen college students be given standardized assessments to measure information literacy skills so secondary program planners will consider these skills more seriously when implementing curriculum, and that schools adopt an inquiry based learning pedagogy. However, at times, blame was placed on teacher librarians for not properly preparing students for college.

Teacher librarians must understand where they need to focus instruction to maximize student information literacy. *The American Association of School Librarians Standards for the 21st Century learner* (AASL, 2009, p. 7) informed teacher librarians that students needed to inquire, draw conclusions, share knowledge, and pursue growth. However, the necessary transition to the *Association of College and Research Libraries*

Information Literacy Standards (ACRL, 2000) outlined that students should also be able to determine the extent of information needed, access, evaluate, and use information. According to Oakleaf and Owen (2010) teacher librarian and academic librarian collaboration was a necessity for successful transition. To create an integrated curriculum, teacher librarians needed to find out where students were lacking knowledge and adapt their curriculum to meet those deficiencies so that their students would be better prepared to make the transition to post-secondary expectations. In turn post-secondary librarians must examine the data from secondary institutions to better understand the levels of the entering college freshmen.

Deficiencies

Studies have referred to embedded information literacy instruction in freshman entry level classes (Deitering & Jameson, 2005; Proctor, Wartho, & Anderson, 2008). However, less frequently examined is a team-teaching situation where an academic librarian was a full participant in a class. Further faculty perceptions of the information literacy of entering freshman require investigation, especially in a setting where faculty have intensive first-hand observations through team-teaching with librarians.

Problem Statement

Entering college freshmen frequently have not exhibited consistent knowledge of information literacy skills needed to be successful students.

Purpose

The purpose of this study was to explore the faculty perceptions and deficiencies in information literacy skills of college freshmen in a small liberal arts college by opening communication with college faculty teaching freshmen seminar courses.

Research Questions

1. What research skills did college professors expect their entering students to have?
2. What dispositions and responsibilities did college professors expect students to demonstrate?
3. For which skills, dispositions, and responsibilities did college professors feel entering freshmen exhibit the most inadequacies?
4. Did professors feel the embedded librarian should be used in other departments in the college?

Definitions

Analyze information- using technologies to conduct comparisons, selecting and organizing content, and developing a thesis statement (Islam & Mumo, 2006)

Information literacy- "technical skills, application skills, research skills in addition to critical thinking, ethics and responsibility, communication, and collaboration" (Allen, 2007, p. 2)

Dispositions- in the context of critical thinking "... an attitude or disposition to recognize when a skill is needed and the willingness to exert the mental effort needed to apply it" (Halpern, 1999, p. 72)

Assumptions & Limitations

For the purpose of the study, it was assumed that liberal arts college classes require research, and many secondary schools have had library staff cuts that may have precipitated a decline in library instruction.

The local community schools had a close working relationship with a midwestern liberal arts college, so the academic population sample interviewees were professors teaching Intersections classes at that college. Other colleges or universities might have had differing expectations about information literacy skills.

CHAPTER2

LITERATURE REVIEW

Introduction

The purpose of this study was to explore faculty perceptions of expectations and deficiencies in information literacy skills of college freshmen. First-year students have not generally exhibited a consistent knowledge of information literacy skills needed to be successful students. Research related to this issue fell into two categories: transitioning from secondary education to post-secondary education and information literacy expectations for post-secondary students at all levels.

Transitioning from secondary to post-secondary education

Previous research found that entering freshmen students' knowledge of research skills varies greatly between and within groups. Many studies have focused on possible variables, including characteristics of students' secondary school information literacy instruction.

Vanscoy and Oakleaf (2008) conducted a syllabus study to plan curriculum-integrated information literacy instruction. They found that most models of tiered information literacy instruction did not include research, only opinions of when skills should be taught to the college students. Their quantitative syllabus study focused more on the student than the educational programs of the students. This study identified what "research skills that first-semester, first-year students" were required to perform (p. 4).

In a southeastern university, the information for 350 new freshmen including the sections and courses was obtained from the registrar's office. The researcher received the

syllabus and assignment information from 139 students' professors. They looked for assignments that required students to find Web sites, books, articles, reference books, and data and statistics. VanScoy and Oakleaf (2008) concluded that if students had to access information in these formats, they would also need to evaluate and cite them.

The results of VanScoy and Oakleaf (2008) found that 97% of students were required to find research resources. Eighty-two percent of those not in writing classes were required to at least find argument-supportive research articles and Web sites, and needed to do so during their first semester. Another finding was that one-third of the students used upper level information literacy skills in their first semester. The researchers concluded with the disclaimer that their research reported on only one university and further studies would have to be performed to corroborate trends for first-semester and upper-level information literacy instruction.

After finding gaps in the research, Oakleaf partnered with Owen to deepen her Evidence vs. Anecdote study for preparing students for post-secondary education through skills taught by teacher librarians (Oakleaf & Owen, 2010). The article focuses on the importance of secondary teacher librarians to partner with academic librarians. The purpose of this study was to identify evidence of instruction in the 21st century skills and AASL's Standards for the 21st Century Learner at the secondary level. The researchers concluded that the first research project showed that unless students were able to "adapt and learn these 21st century skills (interpreting, evaluating, integrating, and citing information) and dispositions before leaving high school, that it is likely they will not be adequately prepared to participate in college-level inquiry-based research." (p. 24) They

contacted several local secondary counselors to find where students were likely to attend college. The teacher librarian partnered with an academic librarian located at one of the colleges. The college librarian received review board approval to collect syllabi. The researchers created tables for teacher librarians to use comparing the standards for the 21st century learner to the syllabi.

The authors recommended that simple comparative percentages of school and college curriculum be shared with administration, teachers, and parents to help illustrate the needs of students to be successful in college (Oakleaf & Owen, 2010). This study supports the call for teacher librarians and academic librarians to collaborate wherever possible.

Finding inconsistencies in student knowledge through the syllabus studies, Liljequist and Stone (2009) have examined programs at bridging the summer gap between secondary and post-secondary information literacy skills.

Increasingly at a variety of academic institutions, summer reading programs (SRPs) have been offered as a component of the first year experience. Liljequist and Stone (2009) stated that "SRPs are generally defined as programs that invite students to complete a reading assignment during the summer in preparation for events scheduled for the beginning of the fall term" (p. 7). Previous research by Ferguson (2006) and others found that common elements at institutions that offer SRPs was that the book is selected by a committee, which was composed of faculty, staff, and students, and typically a different book was chosen each year. Even though some institutions assessed their SRPs, there was not substantial literature on the topic.

During a consecutive five year period beginning in 2003, the Liljequist and Stone (2007) study examined various goals and components of a newly established SRP at Murray State University, a regional and comprehensive university with approximately 10,000 students. The study was designed to examine two questions: whether the SRP was meeting program goals, and what factors influenced student perceptions of the SRP. The research population consisted of student samples from randomly selected classes, initially only first-year composition courses, and during the last three years of the study period also first-year seminar courses.

Among many goals for engagement and learning, "the SRP was designed to challenge students to meet college-level academic expectations" (Liljequist & Stone, 2009, p. 12). The authors considered that the academic component results of their study were positive: the majority of students had read, had class discussions, and had assignments based upon the SRP book. Questions included whether and when students read the year's assigned SRP book, what factors contributed to their reading, how they discussed the book, and what programs they attended. However, in regards to the components of "introduction to intellectual life" (p. 28) and "emphasize the value of reading" (p. 30) results were not as positive. The results tended to show that students participated in reading and activities because they were expected to do so, not necessarily due to motivation to learn or engage. Bridging the gap between secondary and post-secondary education has been identified as a necessary element for successful transition, however students of many post-secondary levels have been illprepared for their research assignments.

Information Literacy Expectations in Freshmen College Classes

Islam and Mumo (2006) noted frequent concerns and frustrations that academic librarians have expressed about the information literacy skills of incoming freshmen including the inability to properly identify library catalogs and other online resources, and also the inability to efficiently use information that they find. The authors also alluded to challenges that academic librarians face in assessing information literacy skills for incoming freshman, including lack of sufficient time to assess skills for "one-shot sessions" (p. 3). Academic librarians also face challenges in gearing instruction for individuals when instruction constraints limit instructional design for a general population.

To find measurable information literacy standards across the K-20 curriculum, Islam and Mumo (2006) separately reviewed the AASL/AECT and ACRL standards. From their review, the authors found 23 common skill sets of the two standards documents. The authors developed a 20- question survey and submitted it to secondary School Library Media Specialists (SLMSs) across the United States. The survey was designed to solicit quantitative and qualitative data and responses to four areas: instructional output, effectiveness, hindrances, and environment (the school library media center). The majority of survey respondents were from the Midwest with all other regional areas represented to a lesser extent. The authors emphasized that since the respondent numbers from each region were not controlled, no correlations can be drawn between demographic data and informational literacy curricula. Instead, the results best served as trends for which skill sets are being addressed at the secondary level.

The survey responses tended to support the challenges to effective instruction that the authors alluded to in their introduction, namely that classroom teachers instead of school library media specialists assume responsibility for the instruction of specific skills, and that 25% or less of a library's operational time was devoted to formal instruction per semester (Islam & Mumo, 2006). Most respondents reported that an adequate variety of technology media and support was available at their sites. Some additional findings were that less than half of students had an assignment that included the freedom to develop a thesis question. Other findings supported the frequent conclusion that inquiry-based learning was the least supported component of information literacy instruction. The authors concluded that in library assessments the knowledge of incoming freshmen had been shown to vary widely. Additionally, academic librarians should have considered assessing incoming freshman with the Educational Technology Service's ICT Literacy Assessment Core Academic Assessment, more collaboration should occur within and between all secondary and post-secondary instructor populations, information literacy education should be incorporated into pre-service teacher training, and academic librarians should be active in teaching information literacy. The assessment of students was one way to collect data on the information literacy skills of college freshmen, but according to Wu and Kendall (2006) students in upper level writing classes were still showing inconsistencies.

Wu and Kendall (2006) studied the requirements of information literacy in business classes and the need to collaborate with academic librarians to implement these skills. They were concerned with difficulties employees had finding appropriate

information and the cost of this in the field of business. The study was conducted by sending a survey to 61 faculty who teach a business writing class to college juniors at San Jose State University and California State University. The research sought the best practices in information literacy instruction, expectations of students' information literacy skills, and how collaboration between librarians and classroom faculty affects research.

The results of Wu and Kendall's research were that business teachers wanted librarians primarily for orientation of library resources and retrieval skills, tools for students to use as resources, search assistance, and providing web pages and presentations on research tools in the library. In conclusion, the researchers stated that integrating information literacy skills into curriculum classes prepares students for the workplace. By creating tools through collaboration, the students gain lifetime literacy skills. According to Patterson (2009), inconsistencies did not end with the completion of a four year degree, but students in Ph.D. programs were showing difficulties with following the evolution of online information literacy skills.

Patterson (2009) completed a case study in Dublin, Ireland, to establish a baseline for what research students should be able to do in an "electronic information environment" (p. 1) when it appears the online information is evolving faster than research skills can be taught. The researcher questioned the information literacy competencies, requirements for different disciplines, student profiles, the ability of programs to meet the requirements of research students, the delivery, and the ability of research to influence instructional programs. They used a model called Evidence Based

Librarianship and Information Practice from Booth in 2003 to create the framework for this study.

Patterson (2009) used a survey to profile, find information literacy knowledge, self-assess, and find expertise in skills of post graduate students. The survey also included a place for subjects to provide information not covered. The results of the survey were analyzed to find trends among data. The variables of this study were the information literacy competencies of incoming students, requirements of research program, and profile results of students in abnormal subgroups.

In the results of Patterson's (2009) study, 22% of the students answered the survey. The majority of students were in a Ph.D. program. The conclusions of the study indicated that students lacked confidence in advanced searching of databases so they tended to use familiar sources only, the visible need to have collaboration between academic librarians and teachers, and the need for instruction in the research process. Students responded that they had "lots of presentations" (p. 6) provided from the library, but their use wasn't explained. Although this study was primarily graduate-based, the results reinforced collaboration and information literacy skills needed in any post-secondary education.

Collaborative Teaching of Information Literacy in Higher Education

In recent years, information literacy has increasingly tended to be fully integrated into higher education coursework. Proctor, Wartho, and Anderson (2005) conducted a study at the University of Otago (UO) in New Zealand, where library sessions had often been in addition to and not fully integrated into the academic course. However, in 2003

library staff began to work to embed information literacy components into coursework. According to the Australian and New Zealand Institute for Information Literacy Framework (ANZILF), the most effective way to increase information literacy skills was to integrate or embed it into the course content. In a pilot project the library staff and Sociology Department partnered to construct an information literacy package throughout the sociology program. The project was "created to assess the effectiveness of both the package and the embedding process" (p. 155). One of the questions that the teaching staff first posed was "what interferes with the acquisition of effective, independent student learning and could these blocks, if any be alleviated through the embedding process?" (p. 156) One frequent block that teaching staff noted was between the assessment expectations of instructors and students. The research team assumed that embedding information literacy components in the course would increase those skills. An important characteristic of the components was that tasks would build upon each other leading to complete the final essay project and that students would receive immediate feedback and points for each task.

The participants of this study were students in freshman and junior level sociology courses (Proctor et al., 2005). To examine any changes the first and second level research groups information literacy were administered surveys and also at the end of the semester. For additional data, second level research students in semester long focus groups were administered more detailed surveys. The quantitative instruments were provided to help reduce any self-reporting bias in the focus group interviews. Participants

in the final stages of the interviews were asked individually to report on their performance throughout the semester.

Results of the study by Proctor et al. (2005) showed positive trends: students responded more positively by the end of the semester to survey questions regarding their awareness of the need to use multiple type resources for research assignments. These trends were also supported by interview responses. The researchers concluded that the data from all levels supported their hypothesis that embedding information literacy content would increase information literacy skills.

In their study Deitering and Jameson (2008) evaluated a collaborative information literacy program of a freshman level reading and writing course at Oregon State University. The researchers specifically examined the aspect of critical thinking and how the relevant course components affected this skill. The researchers emphasized that the term critical thinking is often used in higher education but few have delved very far into what characterizes it. The authors referred to many dispositions that are barriers to effective critical thinking, including approaching research with a preformed opinion in mind and not being open to multiple-viewpoint sources.

In 2001 the librarians in Deitering and Jameson's (2008) study began to teach two information literacy sessions in each of the approximately twenty five sections of First Year Composition. The composition courses were taught by graduate teaching assistants (GTAs). After three years the information literacy components were evaluated and redesigned to form six linked assignments. Three strategies were introduced to reduce the previously mentioned barriers to critical thinking. The first was to revise the writing

assignment so that students could research their own topics, the second was to introduce example models of the academic research process, and the third was to make the course curriculum more consistent across sections.

The main approach of the instructors and librarians was to encourage the students to think about the exploration of topics as listening in on a conversation (Deitering & Jameson, 2008). Librarians were advised to intervene less in the early stages in the research process when students' topics seemed too broad-ranging. The instructors also employed some model templates for students to base their viewpoint gathering and formation on. These templates featured clearly-stated models and more complex variations to reinforce that most topics had more than two viewpoints. Students exhibited positive trends in their knowledge-building process, but the researchers concluded that further assessment had to be performed.

Summary

VanScoy and Oakleaf (2008) and Oakleaf and Owen (2010) showed evidence of a gap between secondary and post-secondary students' information literacy skills. Carefully selected summer reading programs provided a way to bridge that gap (Liljequist & Stone, 2009). However, students were showing inconsistencies with research skills in various college level classes. Academic librarians and college professors have frequently referred to gaps between what information literacy skills were needed for freshmen versus what students learn in secondary education. Professors often allude to their students not having high enough skills in writing and other disciplines. This raised the question about whether the material was not taught at the required levels in high school

or that the students were not retaining the information. Collaborative information literacy programs between academic department faculty and librarians showed positive trends and promise for addressing deficiencies for incoming freshmen. These collaborations were most effective when the student tasks led to a larger goal (Proctor et al., 2005).

CHAPTER 3

METHODOLOGY

The literature suggests that college freshmen frequently did not exhibit consistent knowledge of information literacy skills. This study explored the expectations for information literacy skills through communication with college faculty teaching freshmen seminar courses. Many researchers have examined what information literacy skills college freshmen were lacking. Most of those studies focused on librarians and students (Islam & Murno, 2006; Wu & Kendell, 2006). Oakleaf paired with Vanscoy and Owen in two studies to look at preparing high school students for college freshmen research (Vanscoy & Oakleaf, 2008; Oakleaf & Owen, 2010). A review of the literature about what professors thought of the information literacy skills their students possessed revealed a need to seek the perspective of college faculty teaching freshmen courses. For this study, the researcher interviewed faculty at a Midwestern liberal arts college to find out what skills might be lacking in students enrolled in their freshmen seminar courses. This may have had implications for secondary school librarians and school systems' professional librarian staffing practices.

Research Design

This researcher employed a structured interview to explore the skills, responsibilities, and dispositions expected of college freshmen by their professors (Appendix A). The interview questions were open-ended questions that allowed the researcher to understand the experiences of students based on their professors' views. Interview protocols were used to collect the data, but were adapted based on information

received from professors as defined in Creswell (2008) under characteristics of qualitative research studies.

Narrative research design was conducted through interviews to narrate the stories of individuals (Creswell, 2008). This protocol provided the researcher descriptive views of the interviewees. Through purposeful sampling, the researcher chose individuals from distinct disciplines who all taught Intersections in fall 2010 to discover "concepts within the theory" (p. 216). Four types of interview questions (Wildemuth, 2009) needed to be included in the interview; these were essential questions to provide the focus of the project, probing questions that might not be listed in the interview guide to encourage elaboration of answers, extra questions to help provide understanding of the topic of essential questions, and throw-away questions to help break the ice and "develop rapport" (p. 234) with the interviewee. Creswell (2008) described themes as five to seven ideas that are analyzed more than other areas in collected data. Narrative discussions were used to layer or connect themes. Triangulation among information sources corroborated the evidence from "different individuals...in themes" (p. 266).

Population

The researcher interviewed four members of the faculty of a midwestern liberal arts college who taught the freshmen seminar courses entitled Intersections. These college faculty constituted a purposeful homogeneous (Creswell, 2008) sampling because of their reputation for collaborating with librarians in freshmen seminar classes. This midwestern college's Intersections classes were a formulation of approximately 20 classes taught by faculty from various disciplines in conjunction with one of the four

academic librarians. The classes focused on reading, research, and writing at the academic level. This research focused on the level of information literacy the college professors expect students to perform, deficiencies, and opinions about where students could improve.

Ideal interviewees were the Intersections Coordinator and instructors from three different disciplines. The Coordinator was unavailable, but he recommended another professor, who was interviewed to take his place. The researcher submitted necessary documentation to the Institutional Review Board (IRB), including the Standard Application for Human Participants Review and the informed consent form. Those who were willing to participate were contacted according to approved university IRB procedures. Participants who signed the consent form were contacted to arrange interviews. If more than three professors showed interest, the interviewees were selected from multiple departments and scheduling availability. All potential interviewees were personally asked to participate through an e-mail. The interviewees were coded to protect their responses during reporting.

Data Collection

Interviews with four freshmen seminar professors from a midwestern liberal arts college were recorded with an audio device. The interviews occurred in a one-on-one format at the professors' convenience. Interview questions (see Appendix A) informed the research questions of this study:

- What research skills did professors expect their entering students to have?
- What dispositions and responsibilities professors expected students to demonstrate?

- For which skills, dispositions, and responsibilities did the professor feel entering freshmen exhibited the most inadequacies?
- Did professors feel the embedded librarian should be used in other departments in the college?

Data Analysis

Recorded interviews were transcribed according to the interview protocol (see Appendix B). Following interview, brief notes about significant points were made during each interview. Transcribed interviews (Creswell, 2008) were analyzed to code data and find themes. The initial themes of relating to skills, dispositions, and responsibilities of the students in the Intersections classes were used to begin the process. Close attention was paid to statements that would serve as "in vivo codes" (p. 252) that would provide a narrative understanding of interviewees' answers.

The researcher carefully examined the interviewee responses for evidence of common themes, especially student research skill sufficiencies or insufficiencies. What skills the students brought from their post-secondary experience and what needed to be addressed further. Additionally, how did the Intersections information literacy components address any deficiencies? These themes served as a basis for construction of the narrative report. The narrative report was created with an emphasis on what could be done to improve students' skills, dispositions, responsibilities before and during their first year in higher education.

CHAPTER4

RESULTS

The purpose of this study was to explore the faculty perceptions of expectations and deficiencies in information literacy skills of college freshmen in a small liberal arts college by opening communication with college faculty teaching freshmen seminar courses. Four faculty members were interviewed for this study, and interview questions were based upon the research questions. The participants taught the seminar courses in fall 2010 and were selected based upon their academic department to help ensure a variety of disciplines and teaching styles. English, social sciences, natural sciences, and humanities professors were selected to obtain information on the effect of Intersections on future information literacy skills. To provide anonymity, the teachers were all given pseudonyms in the reflections.

Entering Freshmen Skills

Research question 1 was what research skills do college professors expect their entering students to have? Participants expected the students to have had some exposure and comfort with "gray" questions and research. However, faculty felt that students were less comfortable with this material than with materials that have synthesized such text into "black" and "white" categories. Mark explained,

There is a bias in our culture that defines creativity in a way that doesn't include intellectual work. A theoretical physicist is as creative as a music composer. Our students see the sciences as a very black and white area and it is difficult to form questions until they realize that curiosity is a creative activity.

The students were more familiar with opinion-based than scholarly publications. Jane observed that Google was very familiar to students, but they didn't know how to do deep searches or use scholarly publications. Students did exhibit improvement in evaluation of sources following such information literacy instruction sessions with the librarians. Ann added that students who were naturally curious flourished with a little instruction and were able to create some very thoughtful papers after that curiosity was sparked.

Many of the professors interviewed had similar thoughts on the interview questions, so the researcher synthesized responses according to the four research questions. Through coding the transcripts, the points in Table 1 reflect the thoughts of the interviewees' expectations for entering students. The right column identifies issues and potential areas for growth.

Table 1

Faculty Expectations for Entering Freshmen Skills

Research skills of entering freshmen	Using open web sources Thought through a research process Opinion based writing Basic organizations and functions of writing
Generate effective and meaningful research questions	Students struggle with higher order questions Difficulty framing questions to pursue ideas
Critical evaluation and selection of information sources	Need to learn importance of peer reviewed Skimming to often find quickest answer Exceptional growth with college librarian sessions Need coaching
Recognition of bias	Often believe bias is related to age of material- new is always better Thought of all or none-unable to recognize useful information in a bias source
Incorporation and utilization of information for specified purpose	Difficulty using filter, must learn Incorporate factual accounts Professors have to tease information out. Students learn quickly, but come with little experience

Dispositions and Responsibilities

Research question 2 was what dispositions and responsibilities do college professors expect students to demonstrate? The interviewees expressed the expectation that students should be familiar with plagiarism basics. However, they noted concern that students are not aware enough of the likelihood of inadvertent plagiarism. John felt that it was important that students be taught the full ramifications of plagiarism both in relation to the work and the legal system. Students had misconceptions about the need to

cite online sources and the importance to cite every source they used, not just those sources that they quoted.

Responses about student perception of opposing or multiple viewpoint materials added further evidence that students tended to select materials that reinforce their opinions rather than seeking out differing opinions. Mark referred to students' "fear" of information - essentially materials with viewpoints different than students' expectations. It was very difficult for students to synthesize and incorporate a source in which the author viewpoint challenged what the students had been taught, even when merely showed a different viewpoint of the same event. John added that students didn't take the time to examine important information from a biased source, the implication being that students' interpreted bias as bad in all cases. The students didn't understand that once they discovered the bias of a source, that the source still might have valid information. Ann had a student who wrote excellent papers until it came to a final argument paper. The student only used one source to write a paper, which had no alternative perspectives and no scientific background. The student had trouble with understanding what scientific theories were and how her argument needed to include those.

Students showed tendencies to select quick answers. Ann saw a very clear path of students choosing the sources from the first page of results, from both search engines and periodical databases. After the sessions with librarians to evaluate sources, she observed a clear difference in consideration and incorporation of further sources. Jane saw a need to make sure research topics were interesting to each individual student. She said if the students were not interested in the topic, they would accept what they found and move

on, but if the student was curious about the topic, they were more apt to investigate more sources. Table 2 summarizes faculty perceptions of student dispositions and responsibilities.

Table 2

Faculty Expectations for Dispositions and Responsibilities

Ethics and responsibilities	Aspects of plagiarism Should cite all sources Unaware of seriousness of plagiarism Know how to paraphrase and quote, but not sure how to use one style throughout paper
Opposing and multiple viewpoints in writing	Top students are able to include Most students don't consider opposing viewpoints Difficulty seeing that others have valid ideals
Nature and extent of information needed	Ask for very defined parameters. Want to retrieve fastest answers Know more information is needed, but not how to evaluate sources for information
Recognition of evidence or absence of information sources	Readily accepting information in topic is not interesting Have trouble recognizing what evidence is and how to use it When annotated bibliographies are assigned, students do better
Incorporation of information sources into knowledge base and value system	Growth seen over time though college career Culture teaches students to fear information, so inhibitions have to be broken down

Freshmen Research Inadequacies

Research question 3 was for which skills, dispositions, and responsibilities do college professors feel entering freshmen exhibit the most inadequacies? Students were very comfortable with their devices and technology but not very competent in searching for or evaluating scholarly sources. John felt that even when told, students still did not

see the importance of a peer-reviewed article. He even brought his mail in to show the students that journals wanted to advertise his writing every day, and those mailings used the phrase that anyone could be published. The students didn't understand that peer reviewed meant that the articles were approved by other professionals as acceptable information before it was published. As in responses to other questions, participants referred to students' tendencies to gravitate to sources that reflected their own viewpoints, instead of searching for more diverse viewpoints. Jane and Mark both said you could see the difference in good students and average students in what topics they chose to research. Students that were really interested in class chose sustaining topics. However, students who had little or no experience with research or thought of the class as only something they had to take would choose topics that were very narrow and difficult to research. All four professors felt that they could rely on new students knowing how to do simple web searching and being comfortable with technology, but critical information gathering skills varied greatly. Table 3 summarizes the skills observed consistently and the skills observed in some but not all students.

Table 3

Freshmen Research Inadequacies as Perceived by Faculty

Consistent research skills	Know open web searching Comfort with technology Finding information in a book when assigned
Inconsistent research skills	Surprised by lack of validity Higher level thinking in research Need curiosity, some don't have Finding a sustaining project Some have never used periodical databases Don't know where to look for good sources on internet

Embedded Librarian

Research question 4 was do professors feel the embedded librarian model should be used in other departments in the college? All of the interviewees expressed positive thoughts about the embedded librarian model, and they referred to potential promise in other classes. Participants responded positively to the course librarian partner model, and that the information literacy instruction provided in the introductory seminar provides a base of aptitude in the student. Course professors and librarians should design upper level course information literacy components based upon this aptitude. Ann responded that she has partnered with the college librarians to offer supplementary information literacy in her education classes and that she hoped that her students would model this partnership in their own teaching careers. Ann also referred to the balancing act of the librarian's time pressures - their availability to participate and help facilitate additional class discussion sessions, but also the necessity not to "over burden" the

librarians. Interview questions and prompts regarding co-teaching and information literacy met with frequent and strong responses regarding learning across the curriculum. John emphatically made the points that colleges and universities often "talk the talk" about multidisciplinary instruction, but the "walk the walk" is not so obvious: similar academic programs are organized into departments and divisions and are spread physically over campus into multiple buildings. John and Mark emphasized that higher education institutions need to invest more fully into the multi, cross and interdisciplinary aspects of education, both financially and instructionally. Mark strongly asserted that students are paying too much money for instruction not to be only multi-perspective but also multi-vocal; existing cross disciplinary partnerships need to be ramped up and additional ones encouraged and facilitated. Table 4 summarizes the perceptions of faculty or the embedded librarian model.

Table 4

Embedded Librarian

Information literacy components	<p>Tailor lessons to be practical</p> <p>Lessons are tied to assignments</p> <p>Teachers can assume all students know how to perform research</p> <p>Levels the playing field for all students</p>
Complement of information literacy modules with reading and writing assignments	<p>Teachers can see students transfer knowledge</p> <p>Easy for teachers to build upon knowledge</p> <p>Although discipline specific, students get an idea of best places to look for information</p>
Use of co-teaching reading and writing model in other departments and secondary schools	<p>Overextending the librarian is always a concern</p> <p>When used in any class, a library partner imbeds himself/herself and joins discussions</p> <p>Librarians are being used in high school teaching methods classes and teaching writing classes (primarily discussing using blogs and twitter as well as other web 2.0 tools to teach writing)</p> <p>All classes should be interdisciplinary to prepare students for a multidisciplinary society</p> <p>Secondary education would put colleges to shame if started teaching with less disciplinary divisions and imbedding librarians in classes</p>

Summary

Interviewee responses established points of commonality, the most prominent being that many students are uncomfortable in utilizing multi-perspective information and tend to select information that is complementary to their existing opinions. Deitering and Jameson (2008) found such a pattern and categorized it as a barrier to critical thinking. One interviewee referred to a perception of student fear or information, the

implication being fear of the unfamiliar. Previous research has also found that students tend to gravitate towards familiar sources (Patterson, 2009).

As in previous research (Proctor, Wartho, and Anderson 2005; Wu and Kendall 2006), findings in this study showed that an embedded librarian and integrated information literacy instruction approach was effective in enhancing students' information literacy skills. One interviewee specifically referred to the "exceptional growth" in students' information evaluation and selection skills. Successful partnerships were also alluded to in the comment about information literacy instruction in upper level courses, in this particular instance a capstone course. Interviewee comments reinforced the concept of continual information literacy instruction and partnerships, both with the librarian and other departments, i.e., multi-disciplinary approach. Additionally, at least one interviewee commented on the potential success of secondary information literacy instruction. In this study inference can be made that entering college students were not familiar with or comfortable utilizing critical thinking skills. This finding poses the question of a potential lack of such instruction in secondary schools.

CHAPTERS

CONCLUSION AND RECOMMENDATIONS

Summary

Entering college freshmen did not frequently exhibit consistent knowledge of the information literacy skills needed to be successful. In Chapter 1 expectations of literacy skills in college freshmen are defined. Schools have increasingly used models of team teaching between librarians and professors to ensure students further develop information literacy skills. The purpose of this study was to explore the expectations and deficiencies in information literacy skills of entering college freshmen. The researcher questioned professors about (1) what skills they expected college freshmen to have, (2) students dispositions and responsibilities, (3) research inadequacies of students, and (4) the effect they felt using embedded librarians would have in other college departments. The researcher interviewed four professors from Intersections courses at a small midwestern liberal arts college.

Conclusion

By exploring faculty perceptions of expectations and deficiencies of college freshmen, the researcher discovered that the most common frustration expressed by professors was that students had difficulty accepting multi-perspective information when doing research. Overall, students had a basic understanding of simple research questioning and thesis formation, but they lacked practice and confidence in forming complex ideas needed for successful research strategies. Students had a tendency to select quick answers without evaluating sources, and they were unable to recognize useful

information in a biased source. Students were comfortable using technology but were surprised by a lack of validity of online sources. Students had difficulty using periodical databases and knowing where to look for good Internet sources. By embedding a librarian, teachers could assume that students knew how to do research. The librarian tailored lessons to be practical and tied to assignments. By teaching the Intersections classes, professors were able to see students transfer knowledge to other classes.

The professors saw secondary education as a place where this type of an embedded program would have a great effect on students' research skills prior to college.

A social science professor referenced a teacher/librarian partnership as essential stating:

Students are paying too much money to attend college to not be prepared for a world which is interdisciplinary, cross-disciplinary, multidisciplinary. We need to break down those disciplinaries and make our classes multi-vocal. Students would come prepared with co-teaching. We live in a world where there is no expert. Problems that are worth working on require input from many perspectives. High-schools would put colleges to shame if they started teaching with less disciplinaries in mind.

This statement is indicative of the need for increased information literacy instruction at the secondary school level. Secondary school librarians should seek out or increase partnerships with their faculty to help in the instruction of assignments in which advanced critical evaluation skills, such as understanding bias and seeking divergent perspectives, can be encouraged. Unfortunately, as previously stated many school libraries have had budget and personnel cuts that limit instructional contact hours.

Recommendations for Further Research

This study focused on the professors teaching intersections classes. For further research, the views of the embedded librarians would provide additional details about expectations and deficiencies of entering freshmen. By examining students' knowledge and background, researchers could see a basis for deficiencies. Future studies could examine expectations and deficiencies in various population groups such as secondary school and college students. Which information literacy skills are taught before students get to college and are those levels the best for retention and application of those concepts? Based on Wu and Kendall's (2006) recommendations of an exit exam, would testing the knowledge of seniors help influence secondary curriculums to teach more research readiness skills?

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APPENDIX A

INTERVIEW GUIDE

1. What research skills do you expect entering freshmen to have?
2. What research ethics and responsibilities do you expect students to demonstrate?
3. *How well do your students generate effective and meaningful research questions?
4. How well do your students determine the nature and extent of information needed?
5. How well do your students critically evaluate and select information sources?
6. How well do your students recognize bias in information sources?
7. How well do your students incorporate opposing and/or multiple viewpoints into their assignments and projects?
8. *How well do your students recognize evidence or absence of such in information sources?
9. How well do your students incorporate and utilize information for specific purposes, e.g. informative, persuasive, and argumentative exercises, etc.?
10. How well do your students incorporate information sources into their knowledge base and value system?
11. What research skills do entering college freshmen demonstrate the most consistency with?
12. What research skills do entering college freshmen demonstrate the most inconsistencies with?
13. How well do the information literacy components address and increase research skills?
14. How well do the information literacy modules complement reading and writing assignments in your course?
15. Do you feel the co-teaching model of reading and writing class should be used in other departments in the college? in secondary schools?

*Questions adapted from : McMahon, E. (2009). Information literacy instruction modules for intersections. Unpublished manuscript, Geisler Library, Central College, Pella, Iowa.

APPENDIX B

INTERVIEW PROTOCOL

Freshmen Seminar Professor number: _____ Interview Date and time: _

Professor's significance to this study: _____

Transcripts	Notes During Interview/ Coding of Themes