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Graduate Student Needs in Relation to Library Research Skills

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Abstract

Traditionally, graduate study includes a research component, requiring library skills to locate relevant literature. Upon matriculation into graduate programs, many students are underprepared in library research skills, making library instruction a priority for the success of graduate students. This qualitative study, utilizing emergent design, was developed to help identify needs of graduate students in relation to library research skills. Based on findings of this study, the co-investigators offer recommendations for the support of graduate students with respect to library research skills.

Graduate Student Needs in Relation to Library Research Skills

Background

Traditionally, graduate study includes a research component, requiring library skills to locate relevant literature (Miller, Chabot, & Messina, 2009). Upon matriculation into graduate programs, many students are underprepared in library research skills (Chu & Law, 2007; Jiao & Onwuegbuzie, 2001), making library instruction a priority for the success of graduate students (Collins & Veal, 2004).

Library Anxiety

Research suggests there can be anxiety related to use of library resources because of lack of corresponding knowledge and skills, which in turn can contribute to reduced confidence as a graduate student, which can result in procrastination and/or avoidance, which ultimately can impact academic achievement.

Adult learners will be expected to use online databases to perform research for their course assignments. Block (2007) studied re-entry students completing their graduate programs through distance learning. In cases where re-entry students did not have previous opportunities to perform research using online databases, library anxiety ensued (Block, 2007). Collins and Veal (2004) found that an adult learner with the highest level of library anxiety had a negative self-perception of his/her ability to access information using the Internet for research.

Information literacy instruction facilitates searching skills and enhances students' confidence when performing research (Collins & Veal, 2004). Librarians should furnish knowledge-based instruction in the use of relevant databases, along with hands-on computer instruction to develop skills in accessing information (Collins & Veal, 2004).

Jiao and Onwuegbuzie (1998; 1999a; 1999b; 2001) researched the causes of library anxiety. They determined that graduate students possessing the highest level of perfectionism will suffer from library anxiety (Jiao & Onwuegbuzie, 1998). Other behaviors that indicate library anxiety include procrastination and search avoidance (Jiao & Onwuegbuzie, 1998).

Perfectionism and library anxiety are thought to be the causes for graduate students' failure to complete their thesis or dissertation (Jiao & Onwuegbuzie, 1998). Interestingly, Jiao and Onwuegbuzie (1999a) found that library-anxious graduate students were not worried in any other area of their lives. In a study of 148 graduate students, the researchers determined that library-anxious students perceive themselves as incompetent in comparison with other students who are thought to be more proficient at performing research (Jiao & Onwuegbuzie, 1999b). In order to gain social acceptance and avoid embarrassment, a graduate student who believes he/she is incompetent will struggle to keep his/her incompetence hidden rather than seek assistance from a librarian or instructor (Jiao & Onwuegbuzie, 1999b; Kwon, Onwuegbuzie, & Alexander, 2007). This self-defeating behavior could demonstrate the relationship between library anxiety and social acceptance (Jiao & Onwuegbuzie, 1999b).

Search avoidance might indicate learned helplessness due to a perception of unrealistic standards prescribed by others (Jiao & Onwuegbuzie, 1999b). Librarians and teaching faculty should not assume that graduate students' reading and note-taking skills are adequate (Jiao & Onwuegbuzie, 2001).

Library anxiety can cause behaviors that, left unchecked, may lead to a repeating cycle of procrastination and search avoidance (Jiao & Onwuegbuzie, 2001; Onwuegbuzie & Jiao, 2000). Procrastination increased library anxiety leading to further deterioration of the student's study habits (Jiao & Onwuegbuzie, 2001; Onwuegbuzie & Jiao, 2000). Procrastination results from

fear of failure and task aversiveness (Onwuegbuzie & Jiao, 2000). Onwuegbuzie and Jiao (2000) suggest that instructional librarians and academic advisors should collaborate to assist graduate students in focusing on the search process rather than any anxiety that they might be experiencing.

Kwon et al. (2007) found a link between a graduate student's disposition towards critical thinking and library anxiety. A weak disposition to critical thinking led to a higher level of library anxiety (Kwon et al., 2007).

Onwuegbuzie and Jiao (1998) determined that a graduate student's level of persistence during the search process is a likely predictor of library anxiety. When faced with difficulties in the search process, graduate students may experience feelings of uncertainty or helplessness, self-defeating thoughts, and mental disorganization, which decrease persistence while increasing library anxiety (Onwuegbuzie & Jiao, 1998). To counteract library anxiety, instructional librarians and teaching faculty should provide hands-on practice that leads to positive experiences when searching for information (Onwuegbuzie & Jiao, 1998).

Self-perception plays a part in library anxiety (Onwuegbuzie & Jiao, 2004). Graduate students with low levels of academic self-perception doubt their ability to reach their academic goals (Onwuegbuzie & Jiao, 2004). Older students with high levels of academic achievement, students with clearly defined learning styles, and graduate students with the highest levels of procrastination may experience library anxiety (Onwuegbuzie & Jiao, 2004).

Database Searching and Information-Seeking Behavior

Miller et al. (2009) studied graduate students as they searched for scientific information in a database. They found that a systematic process of four steps was the best method for finding relevant articles on their research topic (Miller et al., 2009). Graduate students should first

search for information, then sort the results by publication date or number of times the article was cited, inspect the abstracts to determine if there are relevant articles, and repeat the entire process to find additional relevant literature (Miller et al., 2009).

Previous Internet searching experience predicts the sophistication of searching strategies used by graduate students (Korobili, Malliari, & Zapounidou, 2011; Wu & Tsai, 2007). Despite prior use of library databases, doctoral students at the University of Parma start new research using Google (Vezzosi, 2009). Students do not like to invest the time and effort needed to learn how to search in complex databases (Vezzosi, 2009). Graduate students choose ease of use when deciding which databases or search engines in which to search for information (Kuruppu & Gruber, 2006). For students who lack the advanced searching skills that would improve the precision of their results, convenience is the most important aspect of the retrieval process rather than the quality of information sources (Kuruppu & Gruber, 2006).

Graduate students utilizing a database with a thesaurus-enhanced search interface are more likely to find the information they are seeking (Shiri & Revie, 2006). By using search terms from the thesaurus, users will find more precise and relevant results (Shiri & Revie, 2006).

Graduate students may be computer literate but may not possess the searching skills needed to find relevant information on their research topics (Chu & Law, 2007). Many graduate students are unaware of the print and electronic resources available from the library (Kuruppu & Gruber, 2006). Kuruppu and Gruber (2006) determined that graduate students are uncomfortable when asking a librarian for assistance due to a belief that they should already know how to use an academic library.

Students at the graduate level benefit from information literacy instruction (Chu & Law, 2007). As doctoral students in education learned about keyword searching, their search queries

became more complex (Chu & Law, 2007). Recognition of the importance of searching skills leads to more frequent use of those skills when seeking information (Chu & Law, 2007).

Depending upon the context of the search, researchers can ascertain distinctive patterns in the information-seeking behavior of graduate students (Kim, 2009).

Emde, Morris, and Claassen-Wilson (2009) found that graduate students are not interested in experimenting with new discovery tools. Graduate students will return to the databases where they had previous success in finding relevant information (Emde et al., 2009; Kuruppu & Gruber, 2006). In testing of 61 post-graduate students, researchers examined human-system interaction and user satisfaction with the display and features to determine the reasons for a preference of databases (Vilar & Zumer, 2008).

High Impact Library Instruction Practices

Due to the complexity of searching for information in an online database, re-entry students may experience library anxiety and computer anxiety (Bellard, 2007). In a study of re-entry students in the Master's of Social Work program at Adelphi University, Bellard (2007) found that the students were unfamiliar with online library resources. After students were exposed to databases and catalogs in a non-credited information competence workshop, additional time and practice were needed to alleviate anxiety and promote student success (Bellard, 2007). Students felt that the information competence instruction provided in the workshop should be integrated into the Social Work program curriculum (Bellard, 2007).

In a survey of graduate students at the University of Notre Dame, Kayongo and Helm (2010) found that 44% of the students surveyed did not utilize reference librarian services. Since many graduate students are unaware of the library resources and services that are available, librarians are advised to reach out to graduate students early in

their academic careers (Fidzani, 1998; Rempel, 2010; Rempel & Davidson, 2008).

Librarians should provide information literacy instruction at the time when students need assistance and will be most receptive (Kayongo & Helm, 2010; Lei, 2008). A skills audit helped librarians at Australian National University to identify courses that would meet student needs for information literacy instruction (Perrett, 2004). The literature review workshops at Oregon State University enabled librarians to assist graduate students in becoming scholars (Rempel, 2010; Rempel & Davidson, 2008). Disciplinary and programmatic differences impacted the type of research assistance needed (Rempel, 2010; Rempel & Davidson, 2008).

Hoffman, Antwi-Nsiah, Feng, and Stanley (2008) found that graduate students at the University of Western Ontario have a preference for subject-specific online workshops. Topics of interest include research strategies, use of citation tools like RefWorks, and currency tools for scholarly literature (Hoffman et al., 2008). Lechner (2007) developed an online tutorial on the CINAHL database that enhanced the process of finding health sciences articles in comparison to a traditional classroom presentation.

A collaboration of librarians and teaching faculty led to the development of a library training unit for graduate students in education (Blummer, Kenton, & Song, 2010). Students explored the library's website, learned about the best databases for educational research, performed advanced searches for information on their research topics, documented their sources using American Psychological Association (APA) format, and constructed a literature review (Blummer et al., 2010).

An important component of information literacy instruction for graduate students is the assessment of instruction and learning outcomes (Emmett & Emde, 2007). Instruction librarians may assess several learning outcomes for a credit course or select one or two learning outcomes

for a research skills workshop (Emmett & Emde, 2007). Emmett and Emde (2007) have identified assessments that use problem-based scenarios as the best way to determine the development of information competencies.

Information Literacy Competency Standards

The Association of College and Research Libraries (ACRL) has developed *Information Literacy Competency Standards for Higher Education* that transcends specific disciplines, defining dispositions of successful students in the higher education setting. With an emphasis on developing skills that enable synthesis and critical evaluation of information in support of lifelong learning, five standards, each with several specific performance indicators, have been developed so that librarians and other higher education faculty can identify essential competencies, design curricula to help students achieve those competencies, and develop assessment tools to evaluate how well students are meeting those desired outcomes (ACRL, 2000). The standards include the following:

- 1) The information literate student determines the nature and extent of the information needed.
- 2) The information literate student accesses needed information effectively and efficiently.
- 3) The information literate student summarizes the main ideas to be extracted from the information gathered.
- 4) The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose.
- 5) The information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally (ACRL, 2000).

Purpose and Research Questions

Given the necessary information literacy competencies of graduate students and associated challenges and anxiety, this study was developed to help identify needs of graduate students in relation to library research skills with the intent of informing the development of high impact library instruction for graduate students. With this purpose in mind, the following research questions were developed:

- 1) What did graduate students report wanting to learn about library research methods?
- 2) What did graduate students report they learned from a library research skills workshop?
- 3) What did graduate students report they wanted to learn more about, having participated in a library research skills workshop, with respect to library research skills?

Methods

This was a qualitative study utilizing grounded theory emergent design to identify emergent themes. Purposive sampling was employed among 52 participants in 11 of *Graduate Research Strategies Workshops* delivered by the university's librarian faculty at California State University Stanislaus, a public, master's comprehensive, Hispanic-serving Institution that offers 24 master's programs and one doctoral program. The library workshops were delivered by library faculty, and sponsored through the University's Center for Excellence in Graduate Education. All workshop participants filled out a workshop participation survey, originally intended for program improvement. The workshop participation survey included open-ended questions, as well as participant contact information and the graduate program in which the student is enrolled. The open-ended questions included the following: 1) What do you want to accomplish from participating in this workshop?, 2) What did you accomplish from participating in this workshop?, and 3) What would you have liked to learn more about during this workshop?.

The workshop format included the following main elements: 1) a presentation on key research strategies for graduate students, 2) a demonstration of useful research and citation style resources, and 3) time for students to explore search tools in their disciplines and develop their research strategies.

The co-investigators used purposive sampling to select participants from the workshop participation surveys to help ensure a distribution of subjects by graduate programs, gender, and ethnicity. The co-investigators contacted potential research subjects via email, requesting participation in the study. Based on responses (agree/decline), the researchers continued to draw from the workshop participants until a reasonable number of participants were attained. The final participant number for the follow-up survey component of the study included five graduate students, spanning four programs.

Two data sources were used to identify emergent themes: 1) written responses in the open-ended “Graduate Research Strategies Workshop” participation surveys developed for program improvement purposes, and 2) follow-up electronic surveys with the subjects who agreed to participate. The workshop surveys were collected at the conclusion of each session. From 11 workshops, 52 workshop participation surveys were collected.

The follow-up surveys included the following questions:

1. How do you usually perform research for a course assignment or research paper? Please describe your research process.
2. How effective is this method for finding relevant information?
3. What are your feelings about library research?
4. What are the reasons you attended the Research Strategies workshop?

5. Please describe any changes to your research process as a result of attending the Research Strategies workshop.
6. What resources or services should be offered to improve the research experience for graduate students?
7. Is there anything else you would like to share about your graduate education at CSU Stanislaus?

The co-investigators reviewed 52 workshop participation surveys and 5 follow-up surveys independently, developing a list of emerging themes and corresponding codes. The investigators reviewed their codes and themes together, agreeing on a final set of predominant emergent themes.

Results

Based on the responses in both the workshop and the follow-up surveys, the following themes emerged. The themes fell into two categories: gains/benefits of workshop participation, and recommendations from the student/participant perspective.

Gains/Benefits

Students described gains/benefits from their workshop participation in the following categories: efficiency, confidence, and specific information literacy skills.

Efficiency

Overwhelmingly, students reported feeling more efficient in their capacity to engage in research projects that require the use of library resources: “[The librarian] taught me how to search for information effectively and efficiently. [I] learned to critically evaluate the information retrieved.” In addition, “The little tips/helpers have reduced the time I spent looking for particular subjects. It has made me more efficient in using my research time.” Another

student added: “I had never searched under the ‘subject’ heading before; doing so now saves me a lot of time and fruitless searching.”

One student addressed the improvement of database searching skills in a survey response: “I have learned how to narrow down my research and focus on my topic. I also learned about new databases that I have not used before.”

What did graduate students find most useful about the library research strategies workshops? “Acquisition of more effective search skills! I learned more about databases that would help my research that I may have not looked at before.” A doctoral student responded, “How to find alternate subject terms in online thesaurus,” summarizing, “I learned research strategies that would definitely help me write my dissertation.”

To at least one student, information-seeking behavior was positively affected through instruction in the use of specific database features: “Great direction on how to get started on the literature review – especially: utilizing [the] online database thesaurus; utilizing reliable Internet search engines and subject directories.”

Confidence.

Another predominant theme was the impact of participation in the library research strategies workshop on students’ self-perception of confidence. The increased knowledge and skills gained from the workshop participation made students feel more confident, and even more importantly, made students feel more comfortable, and more likely, to seek additional librarian support. For example, one student “will feel more comfortable making an appointment with a librarian or calling for help.”

The library offers several ways for students to receive assistance with the research process. “I have also used the after-hours librarian chat service, which is extremely helpful.”

Another student said: “Both departments offer workshops regularly, and the librarians are very helpful and knowledgeable as well.” An additional survey response provided more detail:

I first learned about library resources my first semester at CSU Stan as an undergraduate when my teacher brought my whole class into the library and a librarian went over everything the library offered. It helped so much and I’m still thankful to this teacher for doing this.

Students who previously felt anxious about library research were more confident after learning how to find relevant information on their topics. One student said, “I was able to find articles/journals pertaining to my research. Learning how to use library resources helped me find useful information that I wasn’t able to locate beforehand.” Another student commented: “I feel more secure in my academic decisions, partly because I am learning to access information (through librarians, teachers, and online).”

Specific Information Literacy Skills

Several specific information literacy skills were identified as important skills that students deemed as valuable, and for which they had little or no previous knowledge or background. The specific knowledge and skills identified by participants as falling into this category featured the use of online resources, including the following:

- Online databases
- Database thesaurus of subject headings
- Optimizing use of search terms unique to various databases
- Database e-mail alerts
- Database e-mail and save features for journal articles
- Advanced search functions

- Google Scholar search
- Link+ catalog and electronic requests
- WorldCat catalog
- ProQuest Dissertations database
- Interlibrary loan electronic requests
- Personal cataloging system for thesis/dissertation research
- EasyBib citation tool
- Formatting support, especially related to appropriate citations
- Copyright and fair use laws
- How to effectively evaluate information
- Learning about all the various forms of librarian support available to students, including the online chat option as well as face-to-face assistance.

Student/Participant Recommendations

In relation to needs of graduate students, three primary recommendations emerged from the participant surveys.

- 1) Students suggested that a library orientation/workshop/class be offered as a requirement at the beginning of every graduate program. Participants also suggested that it be embedded as a requirement in the undergraduate experience so students come to graduate school better prepared.
- 2) Students suggested that a course/workshop/class on how to write a thesis/dissertation be offered as a requirement in every graduate program.

- 3) Students overwhelmingly indicated a preference for online access to library materials versus physical materials only accessible in the library, such as paper materials and information on microfilm.

Discussion

Based on the findings of this study, best practices identified in the literature, as well as the *Information Literacy Competency Standards for Higher Education* developed by ACRL (2000), the investigators offer the following recommendations.

Library Resource Instruction for New Graduate Students

Survey responses and student interviews provided librarians with ideas for improving the workshops. One participant suggested that the library offer a required two-day mini-course to inform new graduate students about library resources. Students are busy juggling multiple responsibilities including their families, careers, and graduate studies. It is difficult to ask them to find additional time in their schedules for another requirement that must be fulfilled. Based on findings from this study, it is recommended that graduate programs consider incorporating a library instruction requirement into their program delivery to help ensure that every graduate student has a strong foundation for successful library research.

One potential solution could be an online tutorial that orients new students to the library's resources and services. The tutorial can be made available to students when they log into their University's web-based course management system. A quiz might be required upon completion of the tutorial with the results being forwarded to the instructor or graduate program for verification. The approval of each graduate program will be needed before students can be required to access the tutorial.

Instruction in the Use of Subject Databases

Several workshop participants asked for subject-specific instruction that focuses on the most comprehensive databases used for research in that discipline. History, biology, and social work were among the subjects mentioned in the student responses. One student was more specific in asking the library to offer a seminar on primary source research for graduate students in history.

In addition to the master's degree in library science, most of the librarians at CSU Stanislaus possess a second master's degree in a subject like history or education. Librarians are not subject specialists limited to assisting students and faculty in specific disciplines. Instead, librarians are generalists capable of assisting students to perform research in the most comprehensive databases for their subject area, and provide course-integrated information literacy instruction for classes from various disciplines.

In planning the workshops, librarians discussed whether to use a subject-specific approach or offer instruction that might be useful for graduate students possessing a wide range of experience with database searching. The library faculty wanted to help the greatest number of graduate students, so the workshops were open to any graduate students at CSU Stanislaus who wished to attend. As students identified their educational objectives at the beginning of the workshops, librarians featured examples of the most relevant resources for each student's discipline. In a workshop with limited attendance of only a few students, tailoring instruction to meet each student's need was very effective, according to the survey responses.

When a large group of students from different graduate programs attend a workshop, there may not be enough time to go into detail for each subject area. In that case, subject-

specific workshops could be beneficial. Another benefit of the subject-specific approach is that specialized searches and resources can be presented.

Collaboration with Teaching Faculty

Collaboration with teaching faculty in graduate programs can aid librarians in developing content for students with specialized needs for information. Issues like scheduling conflicts and low attendance can be alleviated by gaining the faculty's trust and support for information literacy instruction for their students. Collaboration of the librarians and teaching faculty for information literacy instruction can lead to an improvement in the quality of student papers, theses, and dissertations. Students are better able to use relevant scholarly resources and adhere to the discipline's preferred citation style for documentation and formatting.

In addition to open workshops, information literacy instruction can be scheduled during the research methods courses in master's and doctoral programs. As an example, graduate students in the research methods courses in education at CSU Stanislaus receive two information literacy instructional sessions during the course. One session focuses on the use of databases for research. The second session affords students the opportunity to follow-up with additional questions on the research process after they have had a chance to search the databases for scholarly literature to support their class assignments. The second session also provides an orientation in the proper use of APA format for citing sources.

Citation Style Workshops

Librarians came up with several ideas to provide additional instruction to graduate students. One idea in response to student feedback was to offer hands-on citation style workshops so students could receive assistance at their point of need. Students were invited to

bring the specific materials for which they had citation questions to the workshop. The librarian could then examine the materials and address each student's questions during the workshop.

Previously, the library offered a number of drop-in workshops each semester. Topics included utilizing specific databases like ERIC to find journal articles or citing sources using APA format. Students were provided with a certificate of completion for attending the workshops. In some cases, faculty members would require students to attend a workshop even if there was no research assignment for the class. The students did not benefit to the same extent as when they had a research assignment that required the use of the concepts learned.

In response to the student surveys, the library faculty offered two APA formatting workshops on a trial basis. Unfortunately, low attendance was still an issue as only two students attended. If students do not have a research assignment at the time the workshops are scheduled, they will probably not attend. Working more closely with the teaching faculty might help improve attendance by scheduling workshops at a time when students will need assistance.

Research Appointments

In each library workshop at CSU Stanislaus, students are encouraged to schedule an appointment with a librarian. Based on the workshop attendance, individual appointments when students have a need for citation assistance may be the best option. Another option might be to schedule instruction in citation format in the research methods course for each cohort of a graduate program. This has been done on a systematic basis for the master's and doctoral programs in education with good results.

Students are also looking for other types of assistance. An example is one student's need for assistance in devising an organizational structure for the articles retrieved from the library's

databases. Whether a student uses a flash drive, laptop, e-mail, or paper folders, there is a need to be able to easily refer back to these research articles for a literature review.

Another student was having difficulty with reading their articles and extrapolating the key points to synthesize in a literature review. A third student needed specialized statistical research on their topic. A fourth student wanted to go through the process of placing an interlibrary loan request. Each of these students needed assistance for different reasons. Their previous experience in utilizing the library's resources for research varied. Emphasizing the benefits of one-on-one assistance for graduate students will alleviate some of the difficulties in trying to meet a wide variety of needs in a limited block of time. Individual attention will enhance learning for students with limited experience performing research or citing their sources using a specific style.

The library usually furnishes about 100 research appointments per year. In order to track how many research appointments are resulting from attendance at library workshop, the library will need to have students indicate whether they have attended a workshop when they request an appointment.

As a result of the workshops, a number of graduate students have had an opportunity to become acquainted with the librarian assigned to their discipline. Some students benefit from working with the same librarian on multiple occasions throughout their academic careers at CSU Stanislaus. Other students prefer to bypass the appointment request form and stop by the reference desk to consult with the librarian on duty when assistance is needed.

One survey response included a statement that the content of the workshop overlapped with previous instruction in a graduate writing workshop. A potential solution is for the library

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faculty to coordinate the topics that will be presented at the research strategies workshops with faculty who teach other library workshops, such as formatting-focused workshops.

Graduate students who return to school after time away still feel like they should know how to perform research even if they have not searched in a database during their previous academic experience. The library workshops offer an opportunity for librarians to reach out to all graduate students who may feel uncomfortable asking for assistance, helping to alleviate some of their anxiety, ultimately supporting their academic success.

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