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THE IMPACT OF INFORMATION LITERACY INSTRUCTION ON THE LIBRARY
ANXIETY AND INFORMATION COMPETENCY OF GRADUATE STUDENTS

by

Rodney G. Birch

Dissertation

Submitted to the Faculty of

Olivet Nazarene University

School of Graduate and Continuing Studies

in Partial Fulfillment of the Requirements for

the Degree of

Doctor of Education

in

Ethical Leadership


May 2012

THE IMPACT OF INFORMATION LITERACY INSTRUCTION ON THE LIBRARY
ANXIETY AND INFORMATION COMPETENCY OF GRADUATE STUDENTS

by

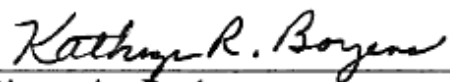
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Dissertation



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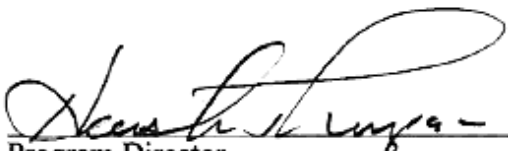
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ACKNOWLEDGEMENTS

I wish to thank my Lord and Savior, Jesus Christ, for the grace and strength to persevere through this process. I also wish to thank my advisor, Dr. Stan Tuttle and my reader, Mrs. Kathy Boyens. It was because of their encouragement and thoroughness that I was able to complete this project. I also wish to thank Dr. Sharon Bostick, Martha Cooney and Lorene Hiris, and Annmarie Singh for granting me permission to use the instruments used in this study. I wish to acknowledge the graduate faculty and students at University Y for participating in this study. I truly could not have done this project without you. Finally, I wish to thank Cohort III for the inspiration to pursue this research topic. The initial reactions exhibited during the library instruction we received during one of our early class sessions led me to research this topic further.

DEDICATION

This dissertation is dedicated to my wonderfully patient and supportive wife Christine for all of her encouragement, love, and support during the process of the doctoral program and dissertation; to my children Robert, Christopher, and Elizabeth for believing their daddy could accomplish the goal of completing the dissertation; to my Cohort III family, for walking with me on this journey; and, to my extended family and friends, for their prayers, support, and words of encouragement throughout this process.

ABSTRACT

by
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May 2012

Major Area: Ethical Leadership

Number of Words: 118

Many persons enrolling in graduate programs of study do so with varying levels of research skills. The lack of research skills often results in students experiencing some level of library anxiety, which occurs most often at the outset of a research assignment. The role of information literacy instruction is to provide students with the skills necessary to define the information need, understand the resources available to fill the need, understand the process for evaluating information, and understand what it means to use information in an ethical manner. This study explored the relationship between the library anxiety and the information literacy competencies of graduate students and the attitudes of the graduate faculty on the need for information literacy instruction.

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CHAPTER I

INTRODUCTION

The prospect of working on a research project often generates feelings of anxiety and frustration for graduate students. Many people who pursue a graduate degree do so after being in the workforce for a number of years. The apprehension of being back in school in addition to navigating the changes in accessing, retrieving, organizing, and communicating information may contribute to the anticipated anxiety and frustration toward the research project. The anxiety and frustration experienced by students may be compounded by the absence of adequate instruction in library research or information literacy. The lack of such instruction as part of the academic department's programming or course content may be related to the graduate faculty's presumption or assumption that the students enrolling in the program possess more experience or a higher skill level in the area of research and composition than may be the reality. Further, much like undergraduates, "graduate students come from a wide variety of educational backgrounds, and frequently have knowledge gaps about finding and using information that can impede their success as researchers" (Rempel & Davidson, 2008, para. 2). The idea that research knowledge and skill tend to dissipate following the completion of a degree should be concerning to institutions of higher education, specifically those training persons for professional vocations. If institutions of higher education are intended to prepare persons for vocation and employment, then research education and instruction should be a fundamental piece of the curriculum.

University librarians have positioned themselves to provide students with the skills and support necessary to overcome the anxiety and frustration that is often experienced at the outset of a research requirement. Librarians present instruction in library research, which may also be referred to as bibliographic instruction, and information literacy. According to the Association of College and Research Libraries (ACRL) (2000), an information-literate person is able to: (a) recognize and understand an information need or problem, (b) discern the appropriate sources to satisfy the information need or problem, (c) evaluate, synthesize, and apply the information as it applies to the need or problem, (d) discern when enough information has been gathered to satisfy the need or problem, and (e) use information and information technology appropriately. Library research instruction provides students with a general acquaintance with resources that are both interdisciplinary and discipline-specific, and provides guidance in how to use the resources. It may also provide basic instruction on the research process, equipping students with techniques about how to select a topic for investigation, formulate questions for exploration, narrow and focus topics for greater management of information, develop a research strategy, including knowing which sources to use, understand the differences between primary and secondary sources, and refine techniques in searching for information sources, including those found in and through the electronic resources of the library (Arant-Kaspar & Benefiel, 2008; Renford & Hendrickson, 1980; Ulmer & Fawley, 2009). Finally, information literacy instruction is a curriculum component which combines the aforementioned concepts, but such instruction also needs to provide a foundation for the evaluation of information and sources for validity, the appropriate and ethical use of information and information

technology, and the ability to access, understand, synthesize, and apply the information that has been collected. Further, information literacy instruction enhances the academic endeavors of the students and promotes the process of lifelong learning. The skills gained through the instruction sessions may be applied over a wide range of information needs and demands that are placed upon the students through the course of their studies as well as in their professional and personal pursuits. According to Rollins, Hutchings, Ursula, Goldsmith, and Fonseca (2009), “much of the academic library literature recognizes the necessity of approaching information literacy as a core skill set that cannot be limited to the academic library only” (p. 455).

Many graduate programs do not offer or provide formal information literacy training that could equip students with the skills necessary to fulfill the current information need as well as fill future information needs. In addition, graduate students often experience either library anxiety, research anxiety, or both when asked to utilize the university library’s resources and services to gather the information needed to fulfill the requirements of a course or research project. These anxieties often affect the searching behavior, information retrieval, and information use of these students. Finally, faculty who teach in graduate-level programs all too often mistakenly assume that students in these programs come in with the appropriate experience or skill base that is necessary to complete the research requirement. Bellard (2007) indicated that further inquiry into “student perceptions and faculty expectations with regard to information literacy at the graduate level” (p. 502) is necessary to determine the effectiveness of either in-course presentations or informal seminars. Nowakowski and Frick (1995) discussed the role that critical thinking skills play in the process of research and the skills of information

literacy. Additionally, Nowakowski and Frick proposed that it may be the very attitude of the faculty toward information literacy, their focus on their discipline, and their personal experience with information that serve as variables that affect the transfer of information literacy skills to students.

Statement of the Problem

There are no studies examining the relationship between information literacy instruction and library anxiety within the graduate student population at institutions of higher education. Studies examining the relationship between graduate faculty perception toward information literacy instruction and librarian-faculty collaboration are discipline-specific; this study would examine the relationship of faculty perceptions across disciplines as they relate to information literacy instruction and faculty-librarian collaboration.

Background

A contribution that institutions of higher education make to society includes the development of a knowledge and skills base that prepares people for vocation and the empowerment of its students to become lifelong learners. The academic library plays a vital role in the development of students as information-literate persons, and serves to assist an institution of higher education in achieving this goal through the provision of instructional programming. In an effort to assist the academic library to fulfill its goal to provide better research or library instruction to students, the Association of College and Research Libraries (ACRL) (2001) adopted a series of information literacy instruction objectives for institutions of higher education. The objectives define purpose for information literacy instruction:

Information literacy encompasses more than good information-seeking behavior. It incorporates the abilities to recognize when information is needed and then to phrase questions designed to gather the needed information. It includes evaluating and then using information appropriately and ethically (para. 10)

The literature is replete with studies or reports on the incorporation of library instruction and information literacy instruction in the academy being targeted to undergraduates (Fiegen, Cherry, & Watson, 2002; Griffin & Clarke, 1972; Lombardo & Miree, 2003). However, the literature relating to graduate-level information literacy instruction or general bibliographic instruction are anecdotal, practical *how-to* discussions, rather than research-based *best practices* (Blythe, 2008; Crawford & Feldt, 2007). Breivik and Gee (1989a) indicated that the need for information literacy instruction is tied to helping people understand the difference between information and knowledge, even though the terms are often used interchangeably. In addition, Bellard (2007) stated, “. . . the research process has become far too complex for students to acquire the necessary skills to be information literate on their own without guidance and instruction” (p. 495). Breivik and Gee (1989b) also stated, “people need to be prepared for lifelong learning and active citizenship” (p. 31). Finally, Rempel and Davidson (2008) indicated that information literacy is necessary to be effective professionals, but is too often neglected in regard to graduate students.

In relation to information-seeking behavior necessitating the demand for information literacy instruction, Barry (1997) stated:

The electronic library and the Internet are altering the nature of information behaviour (*sic*) in academic research: information seeking, information retrieval,

information management and communication of information are all affected by the move from traditional to information technology (IT) assisted information methods. One specific change is the intensification in the need for information skills in an increasingly complex information rich world. (p. 225)

Further, Barry (1997) asserted that the electronic information world requires the seeker to be more focused and have a more thoroughly formulated search process in order to be more specific in the information being sought as to avoid information overload. A study conducted by George, Bright, Hurlbert, Linke, St. Clair, and Stein (2006) indicated that “graduate students often feel overwhelmed by the number of article databases and online resources” (para. 10). Additionally, Wallach (2009) stated:

While universities may be officially in the business of preparing academics, the reality of the jobs market is more complex, so that we are potentially preparing students to function in a variety of settings, presumably as responsible citizens and literate consumers and providers of information. (p. 229)

Another issue to address, according to Washington-Hoagland and Clougherty (2002) and Morner (1995), is to examine why more graduate students do not take advantage of library instruction services when offered. Additionally, Gonzales (2001) indicated that more research is necessary to discern the factors that cause faculty to utilize library research instruction for their students. Research investigating these factors will provide librarians with greater insight into faculty motivation for requesting information literacy instruction for their students.

A third issue to investigate is the degree to which information literacy instruction alleviates the research or library anxiety experienced by many graduate students at the

outset of research projects. Bostick (1992) and Mellon (1986) found that anxiety played a major role in how graduate students viewed the requirement of the research project. Additionally, Onwuegbuzie (1997) indicated that research proposal writing (RPW) students were less likely to tolerate ambiguity in the expectations and requirements of the proposal process. If the students did not understand any element of the research process, they were more likely to give up on the research proposal than were their counterparts with low anxiety. This finding is consistent with the work of Kuhlthau (1991), who found that the anxiety experienced by students facing a research project may prove to be a considerable stumbling block at both the initial, or initiation, stage and the exploration stage of the research process. As a result of her research, Kuhlthau (1988) developed a six-stage research model to assist faculty and librarians in identifying where students were in the research process and what level of anxiety the students were experiencing. The anxiety experienced by students was most often seen at the first stage (initiation) and the third stage (exploration) of the research process. Barry (1997) indicated that faculty and librarians share the blame for not properly educating graduate students in the process of research and information retrieval, and that it is time for the librarians to lead the way in providing the necessary instruction to both graduate students and research supervisors.

Another factor that played into the lack of adequate instruction for graduate students is both the presumption and assumption of many graduate faculty that students entered their programs of study possessing the experience and skills necessary to conduct a thorough literature review and compose a research proposal (Hoffman, Antwi-Nsiah, Feng, & Stanley, 2008). Dreifuss (1981) indicated that most faculty have the understanding that graduate students already know how to use the library. Singh (2005)

indicated that faculty have a higher expectation of what students should know in relation to information access, retrieval, and use than what was actual. Lei (2008) posited that:

Instructors should be aware of students' interest, self-efficacy, anxiety, and involvement in research activities, along with their attitudes toward research at the beginning of the semester. Course activities should then be implemented to promote students' interest, self-efficacy, and build confidence in the process of research and measure their actual ability levels in these areas. (p. 683)

Additionally, Unrau and Beck (2004) reported that "instructors who are concerned with increasing students' confidence in their ability to apply research knowledge and skills must be aware of students' beginning levels of confidence regarding research" (p. 202). Nowakowski and Frick (1995) stated, "a significant statistical relationship is shown between the faculty's view of the amount of instruction needed for their graduate students, and the question about whether they themselves learned their library research skills as undergraduates from their professors" (p. 122). Gonzales (2001) found that faculty had slightly more confidence in their students' command of accessing, analyzing, and using information found on the Internet as opposed to information from traditional print sources. In addition, Rempel and Davidson (2008) found that "these faculty assumptions can do a disservice to students and create challenges for librarians trying to provide increased information literacy services to graduate students" (p. 3).

Finally, the delivery format of information literacy instruction through either face-to-face, web-based means, or both means was discussed to determine whether the availability of one or the other modes of instruction affected whether students voluntarily

took part in formal information literacy instruction sessions. According to Washington-Hoagland and Clougherty (2002), graduate “students identified a need for additional instruction sessions but did not take advantage of available instructional services” (p. 141), and recommended further study to investigate the reasons behind the students’ lack of utilization of these services. Mathews (2009) indicated that one of the issues related to the lack of use of one format, face-to-face sessions, is scheduling. For some students, it is difficult to fit such presentations into their already full schedules. Mathews further explained that “some students prefer a more traditional class lecture, others a hands-on workshop, and some a more self-paced method of tutorials and handouts” (p. 277). Rempel and Davidson (2008) discovered that the workshop format seemed to be quite attractive to graduate students in the various stages of research skill development and the research process. In a study assessing the effectiveness of web-based tutorials to provide general library information as well as in-depth research instruction, Lindsay, Cummings, Johnson, and Scales (2006) found that while some students self-reported that the tutorials were useful and effective, other students reported that they were more confused or did not understand how to complete one of the tutorials. The lack of utilization of instruction sessions did not seem to rely solely on the presence or absence of face-to-face or web-based tutorials. The determining factor for not attending face-to-face sessions was the scheduling factor.

Research Questions

This study investigated the following questions and their corresponding hypotheses:

1. What is the relationship between library anxiety and general information literacy competencies?

H₁: Library anxiety will have an impact on the general information literacy competency of graduate students.

2. What relationship exists between library anxiety and graduate students taking advantage of information literacy instruction opportunities?

H₂: Information literacy instruction sessions will alleviate the intensity of library anxiety experienced by graduate students.

3. What is the attitude of faculty toward the place of information literacy in graduate programs of study?

H₃: Faculty perceive students to possess the information literacy and research skills necessary to succeed in the program.

4. What relationship exists between faculty attitude and whether information literacy instruction is provided?

H₄: Faculty perceive that information literacy instruction is applicable at the graduate level.

Description of Terms

Bibliographic instruction. “The essential goals are understanding of the library’s system of organization and ability to use selected reference materials. In addition, instruction may cover the structure of the literature and research methodology appropriate for a discipline” (Association of College & Research Libraries, 1979, p. 57).

Information literacy. The ability to “recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information” (Association of College & Research Libraries, 2000, p. 2).

Information-seeking behavior. “Those activities a person may engage in when identifying their own needs for information, searching for such information in any way, and using or transferring that information” (Wilson, 1999, p. 249).

Library anxiety. “A situation-specific, negative feeling or emotional disposition which occurs when a student is in a library setting” (Mellon, 1986, p. 24).

Library orientation. “Activities that introduce patrons to the facilities, services, and policies of the library” (Renford & Hendrickson, 1980, p. 184).

Lifelong learning. “All types of learning activities in which adults engage” (Shafer, 1999, p. 2).

Research proposal anxiety. Includes four components: library anxiety (comprising Interpersonal Anxiety, Perceived Library Competence, Perceived Comfort with the Library, Location Anxiety, Mechanical Anxiety, and Resource Anxiety); statistics anxiety (consisting of Perceived Usefulness of Statistics, Fear of Statistical Language, Fear of Application of Statistics Knowledge, and Interpersonal Anxiety); and composition anxiety (comprising Content Anxiety, Format and Organization Anxiety, Mechanical Anxiety, and Fear of Negative Evaluations); and research process anxiety (consisting of Fear of Research Language, Fear of Application of Research Knowledge, and Interpersonal Anxiety). (Onwuegbuzie, 1997, p. 5)

Significance of the Study

The academic library and research demands by faculty and service-related professions have become more complex as society becomes more inundated with information, methods to access information have become more diverse, and appropriate application and use of information have become increasingly important. This study provides a framework for developing an understanding of the information literacy skills of graduate students, the related anxiety experienced by graduate students when faced with a research problem, and the expectations or attitudes of graduate faculty in what their students know in relation to research skills, including information-seeking and information use. The results of these measurements will serve to develop a program of information literacy instruction at the graduate level through the collaborative efforts of graduate faculty and librarians.

Process to Accomplish

This study was based on the action research model, incorporating a QUAN-QUAN method for data analysis. Action research is most useful in the identification of and provision of a solution to a problem within a specific setting, usually educational (Robson, 2002). In action research, the rationale for using the quantitative method is to “explore the possible correlation between two or more phenomena” (Leedy & Ormrod, 2005, p. 179). The study included the administration of two pretests to measure both student participants’ information literacy competencies and level of library anxiety. The instruments used for the study were the Information Literacy Inventory (Cooney & Hiris, 2003) and the Library Anxiety Scale (Bostick, 1992). Both instruments involved the student participants’ self-reporting on their level of achievement of the information

literacy competencies, and how they determine themselves in relation to experiencing library anxiety. The pretests were followed by both formal and informal information literacy instruction sessions. The informal sessions were conducted in collaboration with a faculty member, and will focus on the various competencies of information literacy. Informal sessions were conducted by way of either individualized instruction or web-based tutorials. The instruction sessions were followed by the administration of the posttests to determine whether any differences occurred in the student participants' evaluations from the pretests.

An analysis of variance (ANOVA) was conducted to determine whether the means of scores received on the *Information Literacy Inventory* and the Library Anxiety Scale differed significantly between the programs of study [Master of Business Administration; Master of Arts in Counseling; Master of Science in Nursing; Master of Arts in Organizational Administration; Master of Education in Teaching and Learning; Master of Education in Technology-Enhanced Teaching; and Master of Education with Emphasis in English for Speakers of Other Languages (ESOL)]. (Asquith, 2008; Robson, 2002). A significant difference would warrant further investigation, and would require a post hoc test to vest out where the differences exist (Keppel & Wickens, 2004).

An independent samples *t* test was calculated to determine whether the faculty who possessed positive attitudes toward information literacy were indifferent, more likely, or less likely to collaborate with librarians to integrate an information literacy component in their particular courses than were faculty who possessed negative attitudes toward information literacy.

The purpose of this study was to explore the following variables: (a) the relationship between the library anxiety and information literacy competency of graduate students, (b) the relationship between library anxiety and graduate students taking advantage of information literacy instruction opportunities, (c) the attitude of faculty toward graduate students' the place of information literacy instruction at the graduate level, and (d) the relationship between the attitude of graduate faculty toward information literacy instruction and the inclusion of information literacy instruction in their research-based courses.

Data Collection

For this study a series of instruments was utilized to gather the quantitative data. First, the *Library Anxiety Scale*, as developed by Bostick (1992) was administered to determine the student participants' overall anxiety rating. This instrument served as a pre-/posttest in which an instruction session was offered between the two administrations of the scale. The second instrument utilized was an *Information Literacy Inventory* (Cooney & Hiris, 2003) to gather data on the student participants' overall understanding of information literacy. This instrument also served as a pre- and posttest in which an instruction session was offered between the two administrations of the inventory. Finally, the *Faculty Perception Survey* (Singh, 2005) was utilized to gather data relevant to faculty attitudes toward the importance and role of information literacy instruction.

Sample Questions: [*Library Anxiety Scale*]

(A) The librarians make me feel stupid if I ask a question.

((B) I have to go to too many places in the library to get the information I need.

(C) The library never has the materials I need.

((D) I want to learn to do my own research. (Bostick, 1992, p. 160).

[*Information Literacy Inventory*]

(A) When I have a research assignment, I use the following to find what I need – Internet, Library print materials, Print materials from other libraries, Library databases.

((B) I am more likely to find authoritative information on a research topic at which of the following Internet sites - .com; .gov; .org; .edu. (Cooney & Hiris, 2003, p. 226).

[*Faculty Perception Survey*]

(A) Assignments requiring library research are a regular part of the courses I teach: All, Most, Some, Few, None, N/A.

((B) I have included library instruction in my courses in the past and found it had the following impact on my students' research process: Improved, Made No Difference In, Confused My Students' Understanding of the Research Process, N/A.

(C) My students understand that research is a strategic process and approach it as such: All, Most, Some, Few, None, N/A, Cannot Judge (Singh, 2005, pp. 303, 304).

Participants

The population for this study included the 417 students enrolled in the graduate programs and postgraduate certificate program [Master of Business Administration; Master of Arts in Organizational Administration; Master of Arts in Counseling; Master of Science in Nursing; Master of Arts in Organizational Administration; Master of

Education in Teaching and Learning; Master of Education in Technology-Enhanced Teaching; Master of Education with Emphasis in English for Speakers of Other Languages (ESOL); and, a postgraduate certificate program in Play Therapy] offered at a Midwestern private institution of higher education (University Y). The student population was evaluated as a whole, as well as between the programs of study. The other part of the population included the 12 full-time faculty and 56 adjunct faculty teaching in the graduate programs. The sample referenced in the study included the students and faculty who participated in the study through the completion of the instruments.

Chapter two presents an overview of the literature which addresses the historical and theoretical approaches to library instruction, the academic librarians' role in information literacy instruction, the effect of library anxiety on both the development of research skills and use of the library's resources and services. Additionally, the literature provided a foundation on which faculty perceptions toward information literacy instruction at the graduate could be understood and further explored. Finally, the literature addressed the methods through which information literacy instruction could be provided.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

A review of the literature was conducted to investigate the theoretical and practical implications of information literacy instruction as it is related to the history of academic library instruction services, reduction of library anxiety among graduate students, and the perception of graduate faculty regarding the appropriateness of the inclusion of information literacy instruction at the graduate education level. The first section explores the literature regarding the historical and theoretical overview of the instructional services of academic libraries, and the contributions of academic librarians in the development of people as lifelong learners. The second section explores the literature that addressed the issue of information seeking behavior. The third section explores the literature that discussed the issue of library anxiety, and relating it to other forms of anxiety, such as, composition anxiety, computer anxiety, and statistics anxiety that may also be experienced by graduate students. The combination of these anxieties in the context of graduate students is more generally referred to as research anxiety. The concluding section explores the literature that addresses the perception of graduate faculty regarding information literacy instruction and its inclusion in the graduate curriculum, and the role of collaboration between faculty and librarians

in providing information literacy instruction at the graduate level in order to provide a holistic approach to learning and research.

Historical Survey of Academic Libraries and Instruction

The idea of academic librarians as educators can be traced back to the late 19th century. Dewey (1876), the founder of the library profession, stated that the librarian is now more than a “keeper” and “preserver” of books (p. 5). Instead, the librarian became responsible for providing guidance in the use of the library as well as providing insight on materials that scholars should consult on any given subject contained in the library’s collection. Dewey stated, “The time *is* [*sic*] when a library is a school, and the librarian is in the highest sense a teacher” (p. 6). Dewey’s comment indicated that librarians and libraries should be considered partners with the formal classroom in the educational process. The collaborative partnership between classroom faculty and librarians would provide learners with a more enriching educational experience. The idea of collaboration between classroom faculty and librarians was a new, yet defining concept in Dewey’s day that implied a change in general society, the educational process, and within libraries, the library profession, and the role of libraries in the educational process was taking place. However, the library profession neither anticipated nor welcomed this paradigm shift. The role of the librarian was transitioning from being primarily a keeper and preserver of books to providing instruction for learners on the use of collected resources and the knowledge contained within them. In more contemporary times, the role of the librarian has come to include instruction about the use of technological tools used to access, organize, and disseminate information.

Prior to the 20th century, academic libraries were typically small and required little to no guidance in their use (Lorenzen, 2001). However, as colleges and universities expanded their curricular offerings, including the addition of graduate-level education, the libraries at these institutions were required to grow. The once small and easily navigated libraries became larger and more complex, thus requiring a librarian to provide learners with guidance in the use of these facilities as well as to provide recommendations for books on specific subjects for research and study (Hardesty, Schmitt, & Tucker, 1986). Initially, the instructional role of the academic librarian was a more-or-less orientation-style of presentation, which often included a tour of the facility. Library orientation was defined as, “activities that introduce patrons to the facilities, services, and policies of the library” (Renford & Hendrickson, 1980, p. 184). There was very little in the foundation of the orientation that assisted learners with understanding the research process and the vast resources available for study, and the effective use of information and sources. An expanded version of instruction, commonly referred to as bibliographic instruction, was introduced later which focused more on the research process and use of resources.

Academic librarians became more involved in the teaching of library skills in the early part of the 20th century. Hardesty et al. (1986) provided an overview on the contribution of those who pioneered library instruction:

They gave book talks, bibliography lectures, and orientation tours. Their experimentation did not produce any established structure or even a generally accepted method for effective instruction . . . They did, however, begin the dialogue about the nature and purpose of user instruction. (p. 4)

However, instruction as one of the roles played by the librarian was short-lived. The belief held by many teaching faculty was that all instruction, including library instruction should be the responsibility of the faculty, and the librarians should be concerned with the accessibility of libraries and assisting faculty with book selection (Salmon, 1913). Yet, it was not only those on the teaching faculty who did not favor the idea of librarians being involved in classroom instruction. Even into the 1990s, there were some in the library profession who believed that library instruction was an ineffective method for teaching students about inquiry and research, and that it was only a means by which the librarian sought to achieve the coveted status of faculty (Eadie, 1990; McCrank, 1991). Additionally, many in the academic community believed library instruction for college freshman to be “remedial” and the “responsibility of the high schools” (Hopkins, 1982, p. 194). Shera (1955) stated, “librarians should forget this silly pretense of playing teacher” (p. 13). The combination of antagonistic views from both the academic community and the professional library community dictated that library instruction would not become a standard practice in higher education, but would become more of a sideline activity of the library during the decades between the 1920s and 1960s, even though a few of the “most important librarians and universities of the day were participating in academic library instruction” (Lorenzen, 2001, p. 10).

The framework and foundation for the reintroduction of library instruction to the greater academic community and library profession came in the 1960s and was instigated by the few librarians and institutions who continued the practice of instruction in the decades between the 1920s and 1960s. These library professionals believed such instruction was necessary to effectively prepare learners for academic and professional

success. A more defined concept and practice of instruction was implemented in the 1960s. The transformed model served better to encapsulate what activities and processes were included in the instruction (Lorenzen, 2001). There were essentially two factors contributing to this redefinition: the increase in academic specialization and the consequences of “rapid democratization” (Hopkins, 1982, p. 195).

Additionally, society was experiencing another paradigm shift. The early years of the 20th century saw the population move away from agrarian society to an industrial society; the last 40 years of the twentieth century saw a shift away from industrialization to information (Herrington, 1998). A new phenomenon was taking place. An explosion of information that was created through technological innovation and the widespread incorporation of the technology was flooding mainstream society. The proliferation of information and technological advances required a shift in the way institutions of higher education prepared persons for vocation and success in this rapidly changing society. The period of the 1960s and forward saw an increase in people wanting to become more active citizens, requiring them to become more and better informed on the issues so that more effective decision-making could take place. The theoretical, however, had to be tempered with the practical. The idea of lecturing to students about resources and giving them a tour of the library facility was not enough to equip learners with the skills necessary to navigate through the expanding collections of specialized sources and services, and to understand which sources were best for answering a specific question or series of questions. An additional element that contributed to the redefinition was the emergence of technology into the general mainstream of society.

Technological advances made it easier to access, collect, organize, create, and disseminate information. This technology began to impact the process by which people sought and retrieved information, especially after the Internet was launched into the public domain (Dorian, 1995). Dorian further indicated that while access to information was faster and greater, the seeking behavior was neither enhanced nor improved, and that the creation, implementation, and widespread adoption of the Internet as a research tool provided many users with a false sense that the Internet was equitable to a library, only flashier and more up-to-date. The end result of this technology and rapid transference of information made it necessary for researchers, scholars, and students to develop a skill set that would equip them with the ability to navigate the information streams in order to utilize information effectively, efficiently, and ethically.

The late 1970s and 1980s saw library instruction move away from the general concept of library acquaintance to a method of instruction that provided library users with an explanation of various subject-specific sources and how to utilize them effectively. The librarians provided library users with the knowledge of available research resources as well as the techniques by which the user may obtain the resources and information necessary to prepare one's research (Association of College & Research Libraries, 1979; Renford & Hendrickson, 1980). This particular method of instruction incorporated and required more elements of critical thinking and active learning on the part of the library user than did the lectures and tours (Grassian, 2004). Bibliographic instruction also provided the foundation for what would later be defined and developed as information literacy instruction, which became a standard for the instructional practices of the academic librarian beginning in the late 1990s and continuing to the present.

The shift in methodology from general library instruction, or orientation, began as it became apparent that a mere lecture and walk around the library was not enough to prepare or equip library users to grapple with the elements of research. The methodology became known as bibliographic instruction, because the primary task involved in the instruction, the constructing of bibliographies of resources, as a research tool. Breivik (1989), at one time, was in support of bibliographic instruction, but later argued that bibliographic instruction and library instruction were insufficient modes of instruction for the information age. Instead, it would be necessary to impart both general research theory and the mastery of skills regarding information-seeking, evaluation, and use in order to develop students as intentional learners (Association of American Colleges and Universities, 2002; Breivik).

Another paradigm shift in instruction methodology and philosophy began in the late 1980s, and was carried through to the early 2000s. This shift produced the inclusion of computers and technology as tools for access, organization, and dissemination (Tuckett, 1989). The transformation in philosophy and practice led to the development and adoption of information literacy competencies and standards by the Association of College and Research Libraries in the early 2000s.

During the late 1980s through the late 1990s support for the practice of bibliographic instruction was found in external accrediting agencies. The Middle States Commission on Higher Education was one of the first agencies to implement standards that required the incorporation of bibliographic instruction into the context of the university's curriculum (Lutzker, 1990). The rationale behind the inclusion of bibliographic instruction in the college curriculum was that accrediting agencies

determined that librarians and libraries played an integral role in the learning and teaching process. This philosophy was not shared by many university administrators (Lorenzen, 2001). The administrators were not convinced that librarians and libraries should play such an integral part in the educational process. A disconnect existed between librarians being librarians and librarians being educators. Shera (1955) indicated that when a librarian stepped out of the library and into the classroom he or she stopped being a librarian and was at that moment a teacher, and when he or she stepped out the classroom and into the library, he or she stopped being a teacher and became a librarian. There was a dichotomy to the librarian's role. Nevertheless, the opportunity that academic librarians now had to provide library instruction in the context of a classroom setting was an important development as it moved the relevance of librarians and libraries into the context of both disciplinary and interdisciplinary research and study. Yet, many in the academic community believed that librarians should not play a role in the instruction of students, and eventually such standards for the inclusion of bibliographic instruction all but disappeared from the evaluative criteria of most of the accrediting agencies.

Theoretical Foundation of Library Instruction

At the core of the library instruction movement was the philosophy that librarians provided a service that would benefit the learner, the institution of higher education, and greater society. Dewey (1876) believed that one of the roles of librarians was to “. . . teach [students] to read intelligently, and get ideas readily . . .” (p. 6). There were undertones of critical thinking and active learning in Melvil Dewey's statement,

which may also be supported by John Dewey's thoughts regarding the concern of education: ". . . to enable individuals to continue their education -- or that the object and reward of learning is continued capacity for growth?" (Dewey, 1939, p. 117). The essence of this statement is that learning is intended to be perpetual, not stagnant or isolated to a single time period or setting, and carried out over one's lifespan. The university's role is served in the development of persons as lifelong learners, preparing them for vocation and employment, and to be active and informed citizens (Breivik & Gee, 1989b). This context lent itself to supporting the idea that librarians and libraries, through research instruction, would support the university's role in this endeavor.

Each manifestation of instruction within and through academic libraries was built on the framework of previous systems: library orientation, bibliographic instruction, and information literacy. For the time period each methodology served, learners were introduced to new concepts, new knowledge, and new skills through which new knowledge was constructed. Shanbhag (2006) argued that the current practice of information literacy instruction failed to provide learners with the capacity to create new methodologies and applications for producing knowledge as it was intended; instead, the same processes from decades before have been handed down and repackaged as a different approach. Shanbhag found further support for such comments through Palmer (1972), who indicated three decades earlier that library instruction was a failure. Library related instruction was often more generalistic in nature, being "offered outside the motivational framework for student-recognized need for library resources" (p. 448). Palmer referred to this practice as the "intellectual vacuum" (p. 448), as it served only to provide a generalized perspective of library knowledge rather than assisting learners with

development of library competencies. Yet, the Association of American Colleges and Universities (2002) indicated that, at the foundation, the ideal of library orientation, or bibliographic instruction, or information literacy instruction, reinforced that:

Education is not about short term knowledge, but about a progressive, disciplined, long-term approach to the student becoming an intentional learner, who is purposeful and self-directed in multiple ways . . . integrative thinkers . . . succeed[s] even when instability is the only constant. (pp. 21-22)

As the information literacy competencies and standards were being defined by the Association of College and Research Libraries (2000), the 21st century was looming in the horizon. The information literacy competencies and standards afforded academic librarians an opportunity to instruct learners on skills that would equip learners with a framework through which questions could be answered and problems could be solved, thus developing a basis for being responsible and contributing citizens (Bath & Smith, 2009; Breivik & Gee, 1989b). Information literacy instruction provided an opportunity for the clarification and understanding of the difference between information and knowledge, which are often mistakenly interchanged (Breivick & Gee, 1989a; Grafstein, 2002; Marcum, 2002). However, for information literacy to be adopted and implemented, the instruction must move beyond generalizing library knowledge, as had been the practice of former methods of instruction. Instead, the instruction had to transition to meet the needs of the library users, providing them with techniques for effective seeking, evaluation, and utilization of information. Additionally, the use of information technology in the access, retrieval, management, storage, and presentation of information would also be a key component of the instruction, which should be integrated into the

entire curriculum of the university as it could not be done solely by and through the academic library (Rollins et al., 2009).

Another factor to consider regarding these societal paradigm shifts is the implications on the professions and the job market into which these learners would soon be entering. Rempel and Davidson (2008) indicated that information literacy was necessary to be an effective professional. Additionally, the complexity of the job market demanded a system of instruction that provided learners with the capability to function in a variety of settings (Wallach, 2009). Employers would be seeking candidates who possessed the ability to navigate, evaluate, and implement the information to inform decisions and solve problems effectively (Berger, 2008; Cooney & Hiris, 2003; Shanbhag, 2006).

The increasing complexity of academic libraries at the turn of the 20th to the 21st century demanded that academic librarians adjust their practice to address the need for instruction to illuminate the disciplinary and interdisciplinary sources that would be drawn upon by students and faculty to expand the base of knowledge. The move from bibliographic instruction to information literacy emphasized a change in both academic and professional cultures. Students were transitioned from being mere information receivers to inquirers. As a result, faculty and students were afforded more opportunities to participate in cooperative discovery and exploration activities (Boyer Commission on Educating Undergraduates in the Research University, 1998). This inquiry-based instruction both provided for and required a level of thinking that was not supported in strict lecture-style, tour-style instruction, or general orientation sessions. Critical thinking became a champion component of bibliographic instruction and its successor,

information literacy instruction, and succeeded the more general forms of library instruction. The role that critical thinking played in bibliographic instruction was “determining the reliability of a source” (Goad, 2002, p. 73), including a variety of elements and methods for evaluating information (Berger, 2008). Continued technological advances soon made it necessary for learners to incorporate technological skill, with the defined and developed skills of information-seeking, information evaluation, and information application and use.

Information literacy shifted the responsibility of skill development from the instructor to the learner. The instruction would often take place in the form of both formal and informal classroom presentations, seminars, or workshops (Hoffman et al., 2008; Washington-Hoagland & Clougherty, 2002). Librarians began to radically alter the methodology used to approach instruction on both the use of the library and research methodology in general. There was more of a sense of getting the learner involved; concept-based instruction, or active learning, became the focus of instructional methodology, and bibliographic instruction would never look back. The objective of information literacy instruction was to encourage the learner to become an independent inquirer, through assisting him or her with the development of skills on navigation and the management of information that could be transferred from the academic realm to both the personal and professional realms. It became more than “impart[ing] all needed library knowledge forever” (Palmer, 1972, p. 448). The idea of concept-based instruction allowed for the library instruction to be more learner-centered, providing the basis through which problems could be explored and solved, a practice that could not have been done through a brief lecture on resources and tour of the facility (Grassian, 2004).

The bibliographic instruction of the twenty-first century progressed from being more than just “finding your way in the library” to “gaining critical skills to function in an information age” (Shanbhag, 2006, para. 1). A key consideration in the framework of information literacy instruction is that students are not isolated when they enter the academic world. Graduate students are less isolated from the “real world” than are undergraduates, as many of them still work full-time, have families, and participate in other activities while pursuing an advanced degree. It became extremely important for librarians to provide a more dynamic and effective method of instruction that would incorporate more critical learning processes and the new technologies that allowed for faster and greater access to recorded knowledge and newly created information, while providing graduate students with a set of information skills that could be applied more broadly than to academic work.

As society shifted from being primarily an agrarian culture to a culture more reliant on information production and consumption, the greater became the need for learners to develop skills that would enable them to understand an information need, gather the appropriate information, and use the information in a responsible and effective manner. Society was moving away from being reliant on text-based information, moving toward a digitally-based information orientation, demanding that its citizens be equipped with the skills to navigate, assess, digest, and use the information needed in an efficient and effective manner. The skills learned could be transferred from situation to situation, problem to problem. The justification for transitioning to this system was supported in the prospect of equipping students with a skill set that could be transferred from one

assignment to the next, from one problem to the next, without having to relearn an entire series of sources and techniques.

As a result of the transformation and transition in library instruction methodology, the information literacy competencies and instruction standards were drafted and adopted by the Association of College and Research Libraries (ACRL) in the late 1990s and early 2000s (ACRL, 2000). In addition to providing instruction on resources and general research theory and methodology, academic librarians found themselves providing instruction about the use of the technology itself. While the transformation in library instruction was taking place, it continued to be referred to as bibliographic instruction. This practice was carried over from the early years of the 20th century, when librarians instructed patrons on the creation and use of bibliographies in their research and other scholarly activities. Yet, in the 1980s and early 1990s, bibliographic instruction was transformed in order to incorporate more elements of critical thinking and problem-solving, rather than just the use of various resources (Grassian, 2004).

In the late 20th and early 21st centuries, yet another transformation of the practice of bibliographic instruction was undertaken by the ACRL. The ACRL standards dealing with information literacy instruction were redefined to include competencies that would provide library users with the skills to navigate their way through the massive amounts of information that were being pushed on to them on a daily basis (ACRL, 2000). The change moved librarians away from bibliographic instruction, which was a combination of the “mechanics of locating and using bibliographic items, critical thinking, active learning, and the teaching of concepts” (Grassian, 2004, p. 51). Essentially, information literacy instruction introduced patrons to the academic library, and how to use it and

other sources of information to locate the materials needed for research and study. The new method of instruction focused on providing patrons with the skills needed to navigate through the explosion of information, the appropriate and effective use of information and information technology.

The professional literature is replete with articles discussing the role of information literature in undergraduate education. Discussion of the role information literacy instruction played in graduate education is mainly in practical *how-to* and pedagogical *best practices* types of presentations. The majority of the academic and professional literature represented the learning environment of the undergraduate population of colleges and universities. What little representation of graduate students existed dealt primarily with discipline-specific instruction (Brown, 2005; Cooney & Hiris, 2003; Earp, 2008; Grafstein, 2002; Jacobs, Rosenfeld, & Haber, 2003; Senior, Wu, Martin, & Mellinger, 2009) and not a general representation of graduate culture and learning environments. One of the issues presented in the literature in relation to graduate students and information literacy is that graduate students often assess themselves as having greater skill level at determining information need and evaluating sources than what may be possessed in reality (Perrett, 2004).

Information-Seeking Behavior

One of the activities involved in the research process is information seeking, or the information search phase. Kuhlthau (1991) indicated that the information search is “a process of construction which involves the whole experiences of the person, feelings as well as thought and actions” (p. 362). The result of Kuhlthau’s research was the development of six stages that are involved in the Information Seeking Process (ISP):

“(a) initiation, (b) selection, (c) exploration, (d) formulation, (e) collection, and (f) presentation” (1991, p. 367). The first, second, third, and fifth stages are where students most often experience feelings of uncertainty and anxiety, as the “lack of knowledge” becomes evident (p. 366). Kuhlthau further defined the third stage as the point at which students identify a topic and conduct an initial search for information in general sources in order to gain a greater understanding of the topic, while the fifth stage is a focused search for information on a narrowly defined topic. It is during the fifth stage that students start searching for information in both subject-specific and interdisciplinary sources. The anxiety a student experiences during this stage may be a result of the student’s lack of familiarity with either the subject-specific sources, interdisciplinary sources, or the technical language that is often found in subject-specific sources. Chu and Law (2007) found that students often identified traditional sources, such as “refereed journals, books, theses, students’ supervisors, conference papers, outside experts and bibliographies” (p. 31), but found differences in how Education and Engineering students rated sources concerning the source’s relative importance to research, as well as how the differences in and between sources type played in both the phase of research and information need. Additionally, Foster (2004) found that many students were unaware of how to locate sources of information not located within their discipline.

Additionally, the contemporary researcher relies more heavily on electronic research tools. In many cases, the Internet is the starting point for many students in the research process (Earp, 2008; Monty & Warren-Wenk, 1995). However, the contemporary student conducts searches on the Internet employing the search techniques

of the recreational browser rather than the serious inquirer. Marchionini (1992) stated that, “humans will seek the path of least cognitive resistance . . . “ (p. 156). Essentially, information seekers are unwilling to pursue information that is difficult to find or navigate. According to Tsai (2002), a student’s inability to navigate the confusing and complex web of online information may be the result of an ill-formed epistemology and research strategy. However, Lin and Tsai (2007) found that students who were able to use the information discovered in preliminary online searches to refine their initial searches and integrate the information discovered in future online searches were more successful at accessing a deeper level of information than those who did not, thus recommending that instruction on the skills needed to search online content be included in courses so as to develop effective Web-based learning. Additionally, Griffiths and Brophy (2005) indicated that students often expressed little awareness in alternative methods in retrieving online information outside of search engines, or if they did try other methods, they would most often resort to using Google. Griffiths and Brophy also found that when students retrieved online information they only reviewed the first page of results.

Consequently, the information seeking process offers an opportunity for the seeker to become inundated and overwhelmed with information, which may lead one to experience anxiety. A contribution of information literacy instruction to the educational process should be to provide a basis for understanding when enough information has been gathered to meet the specific information need. According to Prabha, Connaway, Olszewski, and Jenkins (2007), many students concluded the search process when the number of required sources had been located; enough information had been gathered to

write the number of pages required for the assignment; or, when students found that the information was being repeated in several sources.

Library Anxiety

When undergraduate and graduate students are faced with the prospect or requirement of a research project there is some tension or anxiety. The issue of anxiety as it relates to research skills and library use has had minimal coverage in the professional literature. Mellon (1986) laid the foundation for exploring the contributions to the anxiety experienced by undergraduates in relation to the library. Mellon's research found that a major contribution to students' library anxiety was related to their sense of feeling lost. This lost feeling found its roots in one of four factors: "1) the size of the library; 2) a lack of knowledge where things were located; 3) how to begin, and 4) what to do" (p. 62). Bostick (1992) developed the *Library Anxiety Scale* instrument, and identified five elements of library anxiety including, "affective barriers," "barriers with staff," "comfort with the library," "knowledge of the library," and "mechanical barriers" (pp. 81-82). The instrument was administered as pre-and posttest to determine whether any significant change occurred in the students' anxiety following instruction and orientation to the library and research.

The results of the pre- and posttest indicated those elements that students attributed to be the source of anxiety. The elements included everything from the size of the building, to not knowing where or how to begin, to not knowing of whom to ask questions in the library. Regarding the barriers with staff element, Bostick (1992) discovered that students often perceived librarians as too busy or intimidating to approach, which raised the student's level of anxiety because he or she did not know

where to go for assistance. The mechanical barriers related to students' knowledge of and ability to use the various pieces of equipment available in the library for research purposes, such as computers and printers, and microfilm readers and printers (Jiao & Onwuegbuzie, 1997). As a follow-on study based on Bostick's study, Jiao and Onwuegbuzie found that students reporting the highest levels of anxiety included the following groups: "males, those who do not speak English as their native language, those who have a relatively heavy course load, and those who are engaged in full-time employment" (p. 217). Many graduate students fit into either the second category or last category, providing greater insight about the nature and origin of the library anxiety experienced by graduate students.

Jiao and Onwuegbuzie (1997) further discovered that those with extreme levels of anxiety also tended to visit the library infrequently. Pursuing this topic even further, Jiao and Onwuegbuzie (1998; 1999) found that a student's learning preference may contribute to the anxiety he or she experiences at the outset of a research project, and that one's proclivity to perfection may also create an environment supporting the development of anxiety. According to Jiao and Onwuegbuzie (1998), the element of perfectionism is closely related to procrastination as well as what may be interpreted as unrealistic expectations imposed on the students by others. Additionally, related to Kuhlthau's work (1988; 1991) regarding the Information Search Process (ISP), Onwuegbuzie and Jiao (2004) suggested that library anxiety may impair the process at the point of the student's input, or the action of topic selection (initiation, exploration) as well as the student's output, or the "termination of the searching process and to prepare to present or to utilize the selected information" (p. 44).

Onwuegbuzie (1997) found that other elements contributed to the graduate students' anxiety when faced with the prospect of a research project. Additional elements included statistics, or mathematics anxiety, and composition anxiety. Beckers, Schmidt, and Wicherts (2008) indicated that computer anxiety also contributed to the overall anxiety of graduate students. Patel and Chauhan (2010) indicated that a student's attitude toward information technology influenced the use of such technology in academic endeavors. A graduate student may experience any one or all of these elements of anxiety at some point during the research project. For many students who experienced one or all of these forms of anxiety, the idea of any researched-based course held negative connotations for the student. Onwuegbuzie (1997) found that academic performance could, in some fashion, be connected to whether a student experienced one or all the elements of anxiety. Lei (2008) indicated that faculty and librarians' involvement in and understanding of students' self-efficacy, anxiety, and research interests would provide greater support to the student and would serve to alleviate some of the negative context of a research-based course.

Critical thinking disposition and its relationship to library anxiety must also be considered in this discussion of library anxiety and graduate students. Facione, Facione, and Giancarlo (2000) defined critical thinking disposition as, "the consistent internal motivation to use critical thinking skills to decide what to believe and what to do when one approaches problems, ideas, decisions, and issues" (p. 1). A person who thinks critically was defined as, "habitually inquisitive, well-informed, trustful of reason . . . diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry . . ." (Kwon, Onwuegbuzie, & Alexander, 2007, p. 269). The connection of this

line of thinking to the discussion regarding graduate students, information literacy instruction, and library anxiety may be found in the natural tendency of human nature to mistrust his or her thinking, leading to an illogical fear and sense of inadequacy in relationship to libraries and intellectual activities necessary for effective and productive research. The idea of a critical and logical thinking disposition is supported by Kwon et al. in that graduate students who approached their research from an analytical, organized fashion experienced less library anxiety than did those who showed uncertainty in the process. Additionally, Kwon et al. found that students' thinking disposition affected and often determined their information-seeking behavior as well. Ward (2006/2007) argued that part of a person's critical thinking ability goes beyond mere analytical ability, also employing some method of creativity in the management of information. For the cognitive and intellectual processes involved in the research process, the student must employ both analytical and creative systems of thinking to be productive and overcome the anxiety experienced at the outset of the project.

Faculty Perceptions

The instructional activities of librarians have always been viewed with some level of skepticism by many in academia. Since the earliest days of the library instruction movement, both faculty and academic librarians have discounted the need for librarians to be involved in instructing students on the use of the library and the techniques for navigating, evaluating, and using information appropriately and effectively (Bellard, 2007; Eadie, 1990; McCrank, 1991; Salmon, 1913; Shera, 1955; Singh, 2005). Further, Eadie believed that bibliographic instruction was merely a creation of the academic

library to present itself viable to the academic community, not because it was something that was requested by the learner.

Several factors had to be considered to determine faculty perception toward information literacy instruction and its implementation and integration into the graduate curriculum. The first factor considered was that faculty may not understand the relationship between librarians and the educational process of students, specifically at the graduate level, and what information literacy instruction contributes to the process (Bellard, 2007; Gonzales, 2001). Second, a previous experience with some form of library instruction -- their own or otherwise, may have influenced their opinion on the relevance of information literacy instruction, specifically as it relates to going beyond a one-hour presentation during one session of a course (DaCosta, 2010; Nowakowski & Frick, 1995). Third, faculty may not understand the connection between information literacy instruction and their subject area (Grafstein, 2002; Hardesty, 1995; Nowakowski and Frick, 1995). Grafstein indicated that information literacy instruction provides students with the ability to determine the level of change in the information within a given subject area, and also with the ability to be prepared to discount others' claims or beliefs that information in all subjects changes at the same rate, leaving behind mounds of antiquated data.

Additionally, Nowakowski and Frick indicated that the critical thinking skills that are developed through the process of information literacy instruction serve the academic disciplines well as learners are better equipped to understand the relevant and applicable information, while at the same time connecting the irrelevant and obsolete information to the knowledge network so that new insights and knowledge may be created and added to

the base. Finally, Hardesty proposed that faculty culture tends to be more concerned about “disciplinary integrity, subject expertise, research, and autonomy while library’s culture may be more committed to an interdisciplinary perspective, the research process rather than the product, and student learning” (p. 48). The faculty must have some motivation to unite their courses, their discipline, library instruction and research together.

The final factor to be considered is that many graduate faculty assumed that graduate students entered their respective programs of study already skilled with the abilities necessary to research and compose a successful research projects (Dreifuss, 1981; Hardesty, 1995; Hoffman et al., 2008; Murry, McKee, & Hammons, 1997; Singh, 2005). However, graduate students entered these programs from a variety of backgrounds and experiences, and may have been unaware of their own deficiency in research training (Bradigan, Kroll, & Sims, 1987). Perret (2004) reported that when graduate students completed an information literacy competency pre- and posttest, many of the students rated themselves much higher than they should have, i.e., having the skills necessary to complete a research project, on the pretest than they did on the posttest. The instruction between the tests helped the students identify areas in their skill sets that needed more development. Additionally, Singh indicated that faculty afforded students a greater attribution of research skill possession than what may have been reality. Faculty are involved in the process of developing and preparing students for lifelong learning, making the students prime candidates for information literacy instruction (Boon, Johnston, & Webber, 2007). Graduate faculty need to have some foundation for understanding why information literacy instruction is important for their students and the

success of their programs before they will agree to adjust their courses and curriculum to integrate this instruction component.

For information literacy instruction to be effective and integrated into the culture of the academics of a university, the faculty and librarians must work together: working to understand the culture in which the other operates, and where priorities for each are located (Hutchins, Fister, & MacPherson, 2002). Hardesty (1995) provided insight into the faculty's perception on the role of the librarian in the educational process. If a fulfilling and quality educational experience is to exist for the students, then the faculty and librarians must step beyond predetermined boundaries and work together (DaCosta, 2010). One of the obstacles faced by librarians in the endeavor to collaborate with faculty is that most faculty "are not interested in sharing their classroom with librarians, or in being held responsible for teaching their students how to use the library" (Hardesty, 1995, p. 365). Additionally, faculty are concerned over the loss of time to present subject matter (Cooney & Hiris, 2003). However, to communicate effectively the information skills necessary for the promotion of lifelong learning it is necessary to integrate the instruction throughout each course in the program, not limiting the instruction to a single presentation (Holmes, 2000). The librarians should be involved in a strategic process for employing the support of the faculty regarding information literacy instruction. The collaborative effort should involve faculty in the discussion and decision-making surrounding the implementation of campus-wide information literacy standards (Little & Tuten, 2006). The collaboration process involved some development on the part of faculty through seminars and workshops to orient them to the idea, object, and role information literacy instruction can play in the educational process (Iannuzzi, 1998;

Veach, 2009). Faculty should be involved in learning how students conduct the research they require for the fulfillment of course assignments and projects, but many faculty do not assist students in this endeavor beyond giving the assignment. Morrison (2007) studied the motivational factors involved in faculty participation in the development of their students' research skills. Some faculty engaged in this activity based on their interest in producing "independent learners with transferrable skills" (p. 1), and to develop the next generation of scholars. Morrison's study proved useful for instruction librarians interested in collaborating with faculty, as not all the faculty in the study had engaged in conversations with the librarians to provide research instruction to their students. Academic librarians and faculty must be involved in deliberation and the eventual adoption of information literacy standards campus-wide, but also in regard to specific disciplines (Lampert, 2005). The interaction that Lampert defined illustrated the point that graduate students face a proliferation of resources, and it is the responsibility of the faculty and librarians to provide graduate students with the training to discern and navigate the resources suited to their chosen discipline. In regard to discipline-wide collaboration, Dorner, Taylor, and Hodson-Carlton (2001) discussed the tier system for information literacy instruction for nursing students. The librarians and nursing faculty built on the skills that had been covered in the general English composition courses to develop further the research skills of the nursing students. Students were introduced to discipline-specific resources and methodologies of research. The successive tiers introduced and allowed for development of new skills for students. The librarians and faculty discovered that students retained the skills much longer than they had previously when general library research had been assigned. The activities were more closely tied to

the course, program, and professional objectives. The information literacy instruction provided a basis for the development of lifelong learners; students would take what they learned in this context and apply the skills in the workforce. Although it takes initiative and effort, the best way to implement and integrate information literacy instruction across the curriculum and throughout disciplinary study is for faculty and librarians to collaborate in the educational and learning processes of students. Williams (2000) suggested, in addition to the formal classroom instruction, that information instruction could take place through online tutorials and reference desk consultations, which may be less imposing than the formal classroom presentations.

This chapter has been a review of literature introducing the reader to the historical and theoretical nature of instructional services provided by academic librarians through the academic library, the searching behavior and process of students, library anxiety, and faculty perception of information literacy instruction. Academic librarians and libraries have contributed to the educational process of higher education through the development of persons as lifelong learners. A variety of instructional methods and processes have been utilized by academic librarians and libraries throughout the past century as a means to equip persons with both a general knowledge of libraries and information sources and a framework for critically navigating the complex web of information sources, evaluating the relevancy of information and sources, formulating effective search strategies, determining when the information need has been met, and using information effectively and appropriately. The latter method of instruction is referred to as information literacy instruction. Information literacy instruction has been largely incorporated in the undergraduate curriculum of colleges and universities, but has not

been implemented at the graduate level. Library anxiety is often experienced by graduate students as they face an increased demand for research, having to navigate the complex systems of academic libraries and complex network of information on the Internet and other sources. Faculty who teach in graduate programs often assume or perceive that students entering graduate programs of study already possess a certain level of research skill. These perceptions by faculty often contribute to the lack of information literacy instruction being implemented and integrated in the graduate curriculum.

Chapter three describes the methodology of this quantitative study. The reader will be introduced to the instruments and population used in the study. Additionally, there will be an explanation of the statistical methods used to analyze the data that was collected through the research instruments utilized, providing the basis for the findings and recommendations.

CHAPTER III

METHODOLOGY

Introduction

The focus of the study was two-fold, and included two variables. The first variable addressed whether the library anxiety of graduate students may be related to the absence of information literacy instruction, and whether information literacy instruction had an impact on the library anxiety of graduate students. The second variable was related to faculty perceptions about the role of information literacy instruction at the graduate level and whether faculty who were more positive toward the inclusion of information literacy instruction were more willing to collaborate with librarians to effectively integrate information literacy instruction into the curriculum.

Graduate students often experience anxiety and frustration at the prospect of a research project. A student's lack of confidence in the effective use of library resources and services contributes to this anxiety (Bostick, 1992; Mellon, 1986; Onwuegbuzie, 1997). Additionally, Rempel and Davidson (2008) indicated that these feelings of anxiety may be the result of varying levels of research ability and skills that are possessed by the student, and the expectations placed on students by graduate faculty who often assume that students entering graduate programs possess a greater level of research competency than what is possessed in reality (Dreifuss, 1981; Hoffman et al., 2008; Nowakowski & Frick, 1995; Singh, 2005).

Research Design

This quantitative study was based on the action research model (Coch & French, 1948). Action research is most useful in the identification of and provision of a solution to a problem within a specific setting, usually educational (Robson, 2002). The rationale for using quantitative methods was to determine that one's questions have been validated by the data (Robson). Further, the study was non-experimental, as the independent variable was not manipulated during the course of the study (Bostick, 1992). The study explored the phenomena related to: (a) the impact of library instruction, or information literacy instruction, on the library anxiety of graduate students, (b) the perception of faculty regarding the importance of information literacy instruction at the graduate level, and (c) whether faculty who were more receptive toward information literacy instruction were more likely to collaborate with librarians to integrate the information literacy competencies into various course assignments and projects.

Population

The population used in this study included the graduate students and graduate faculty at University Y. University Y is a private, four-year liberal arts institution of higher education in the Midwest. The graduate programs at University Y are accelerated in nature, which means the students are involved in coursework for 14 to 24-months, depending on the program. Four graduate programs were offered at University Y. They included:

- Business
- Counseling
- Education

- Nursing

Within these four programs, five graduate degrees and a post-graduate certificate were offered at University Y. They included:

- Master of Business Administration
- Master of Arts in Organizational Administration
- Master of Science in Nursing, with tracks in Nursing Education and Healthcare Administration
- Master of Arts in Counseling, with tracks in Pastoral Counseling, School Counseling, Marriage and Family Counseling, and General Practitioner's licensure
- Master of Arts in Education, with tracks in Teaching and Learning, Technology-Enhanced Teaching, English for Speakers of Other Languages (ESOL), and Reading Instruction
- Certificate in Play Therapy

The Master of Business Administration and the Master of Arts in Organizational Administration degrees were offered under the direction of the Graduate Studies in Management Department; the Master of Arts in Education degree was offered under the direction of the Graduate Studies in Education Department; the Master of Arts in Counseling degree and post-graduate certificate in Play Therapy were offered under the direction of the Graduate Studies in Counseling Department; and the Master of Science in Nursing degree was offered under the direction of the School of Nursing and Allied Health. The courses in the Graduate Studies in Education programs were offered mostly

in an online format, with only one group meeting on site at the university during the timeframe of the present study.

The population included 417 students and 68 faculty (full and part-time). The two programs in the Graduate Studies in Management Department shared faculty, and students were cross-enrolled between the two programs. Additionally, the students in the Healthcare Administration track in the Master of Science in Nursing program were dually enrolled in courses in the Master of Arts in Organizational Administration program. The Master of Business Administration had one full-time faculty and 21 part-time faculty, with 130 students. The Master of Arts in Organizational Administration program shared many of the faculty and students of the Master of Business Administration program. Table 1 provides a summary of the demographics regarding the number of students and faculty in each program.

Table 1

Demographics of Graduate Programs, by Number of Students and Faculty

Program	Students	Part-Time Faculty	Full-Time Faculty
Master of Business Administration			
M.A., Organizational Administration	130	21	1
M. A., Education	110	10	3
M.A., Counseling	107	4	7
M.S., Nursing	40	9	1
Play Therapy Certificate	30	12	0
Total	417	56	12

The Master of Science in Nursing was a new program to University Y at the time of the study. This factor contributed to the low student and faculty numbers in this program. The first group of students started coursework in January 2011. The Master of Arts in Counseling program received national accreditation through the Council for Accreditation of Counseling and Related Educational Programs (CACREP) while the study was in process. The post-graduate Play Therapy Certificate program was under the jurisdiction of Master of Arts in Counseling program. The students and faculty who participated in the study through the completion of the instruments comprised the sample that is referenced in Chapter Four. The sample included 71 students, which was 4% of the students enrolled in the four graduate programs, and 15 faculty, which was 22% of the faculty who taught in the graduate programs. Many of the students who were enrolled in the online programs did not complete the instruments. This study did not include such demographic data as gender, race/ethnicity, prior degrees earned, and number of years since last earned degree of the student population.

Data Collection

The instruments used in the study were the *Information Literacy Inventory* (Cooney & Hiris, 2003), see Appendix A; the *Library Anxiety Scale* (Bostick, 1992), see Appendix B; and, the *Faculty Perception Survey* (Singh, 2005), see Appendix C. The *Information Literacy Inventory* was used to determine how students would rate themselves in regard to being information-literate before and after an information literacy instruction session. The *Library Anxiety Scale* was used to evaluate how students related to the library, its services, and staff as a viable resource in the research process. The survey developed by Singh was used to gather data measuring faculty attitudes toward

the importance and role of information literacy instruction in graduate-level programs, and how faculty rated their students' information literacy competency. The researcher was granted permission by Cooney & Hiris, Bostick , and Singh to utilize the instruments for this study.

The *Information Literacy Inventory* was a 12-item questionnaire in which respondents could provide multiple responses to individual questions. An open-ended question provided students with the opportunity to include feedback that pertained to the aspect of the research process with which they struggled the most.

The *Library Anxiety Scale* was developed and validated by Bostick (1992). The 43 items on the questionnaire addressed the five dimensions of library anxiety: “barriers with staff, affective barriers, comfort with the library, knowledge of the library, and mechanical barriers” (Onwuegbuzie, Jiao, & Bostick, 2004, p. 36). The 43 items were measured using a Likert-style scale. The options for responses ranged from “strongly agree,” “agree,” “undecided,” “disagree,” and “strongly disagree.” Statements from the “barriers with staff,” “affective barriers,” “comfort with the library,” and “knowledge of the library” dimensions were most relevant to this study and included:

Statement 1: I am embarrassed that I do not know how to use the library

Statement 4: The reference librarians are unhelpful

Statement 5: The librarians don't have time to help me because they're always on the phone

Statement 9: I am unsure about how to begin my research

Statement 10: I get confused trying to find my way around the library

Statement 16: I feel comfortable using the library

Statement 17: I feel like I'm bothering the reference librarian if I have a question

Statement 23: The library never has the materials I need

Statement 28: The library is an important part of my school

Statement 29: I want to learn to do my own research

Statement 38: I don't know what resources are available in the library

Onwuegbuzie et al. (2004) described the "barriers with staff" dimension as the students' perceptions that librarians and the library staff were intimidating and unapproachable; the "affective barrier" dimension related to the students' feelings of inadequacy when it came to using the library; and, the "knowledge of the library" dimension referred to how well the students knew the library (the greater the unfamiliarity with the library, the greater the level of anxiety). The *Information Literacy Inventory* (Appendix A) and the *Library Anxiety Scale* (Appendix B) were administered as a pre- and posttest with a 20-minute instruction session between the pre- and posttests. Students who did not wish to participate in the study were given the option to return the blank pretests to the researcher. As the participating students turned in the completed pretests, the researcher assigned each test a number to correspond with the number assigned to the respondent in order to ensure that the tests would be matched accurately with the posttests of the same respondent.

The *Faculty Perception Survey* (Appendix C) developed and validated by Singh (2005) to measure faculty attitudes toward information literacy was distributed one time to faculty. The instrument consisted of 27 items that were measured using a Likert scale. According to Singh, validation issues occurred in the original study with question number 12: "My students are comfortable using computers for information gathering and data

manipulation.” The original survey had two items labeled as 12. The second item 12 was the item with a reliability problem as the statement combined two factors that should have been treated separately, according to Singh (personal communication, May 13, 2010). Statement number 13 on the instrument for the current study was the item with the reliability issue, and was not used in the final data analysis. The ratings for questions one and two included: “every,” “most,” “some,” “few,” “none,” and “N/A.” The ratings for Statement 6, and for Statements 12 through 23 included: “all,” “most,” “some,” “few,” “none,” “N/A,” and “cannot judge.” The ratings for questions seven and eight included: “excellent,” “strong,” “adequate,” “poor,” “N/A,” and “cannot judge. Finally, the ratings for Statements 9 through 11, and for Statements 25 and 26 included: “all,” “most,” “some,” “few,” and “none.” An open-ended question provided faculty the opportunity to indicate which information literacy skills best prepared students for the research process. An allowance was constructed for faculty teaching technical courses in which research projects were not required, thus not demanding research instruction. Faculty in this category could use the “N/A” or “cannot judge” ratings to exclude their ratings from the analysis (Singh, 2005). Further, the faculty who participated in the survey assessed the research skill of students overall, not differentiating between skill levels. According to Singh, the objective assessment of the graduate students’ research skill level by faculty provided further validation of the instrument because it removed any question of subjectivity based on where the students were in their respective programs.

The researcher coordinated with the program directors and course instructors to disseminate information regarding the purpose of the study. The data collection took place from October 2010 through August 2011. The instruments were administered

through both an online distribution mechanism, Survey Monkey®, for the programs with all or some online component, and face-to-face for the programs with no online component. The *Information Literacy Inventory* and *Library Anxiety Scale* pretests were followed by an information literacy instruction, or library instruction session. The 20-minute sessions were conducted in cooperation with the faculty member teaching the course, and were done by the researcher. Having the researcher conduct all the instructional sessions ensured that the information was consistent across sessions. The five standards of information literacy (Table 2) provided the framework on which the instruction sessions were designed and delivered.

Table 2

Information Literacy Standards

Standard Number	Standard Definition
Standard One	The information literate student determines the nature and extent of the information needed.
Standard Two	The information literate student accesses needed information effectively and efficiently.
Standard Three	The information literate student evaluates information and its sources critically and incorporates selected information into his or her own knowledge base and value system.
Standard Four	The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose.
Standard Five	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.

Note. Association of College and Research Libraries, 2000, p. 8-14. See Appendix D.

Each of the five standards has a number of performance indicators (what the student should know) and outcomes how the knowledge is transferred to practice. Elements of these indicators and outcomes were included in the instructional sessions to provide students with the foundation on which to conduct research and utilize the information in an appropriate manner. The instruction sessions also incorporated general information regarding the university library's resources and services, which included: (a) library staff and contact information, (b) how to access library resources outside the library, (c) reference, research consultation, and interlibrary loan services, and (d) electronic and print resources specific to the discipline.

Information literacy instruction sessions were not provided for the students in the Master of Arts in Organization Administration and the Graduate Studies in Education programs, for two reasons. First, the faculty teaching in these courses indicated that their students would not benefit from the instruction sessions. Second, a time could not be coordinated between the faculty member and researcher to conduct the instruction sessions in the courses.

The instruction sessions were followed by the administration of the *Information Literacy Inventory* and *Library Anxiety Scale* posttests to determine whether any differences occurred in the student participants' assessments from the pretests. The pre- and posttest design offered the opportunity to evaluate whether the differences between the results of the tests determined whether the instruction sessions were effective in lowering or eliminating library anxiety experienced by students (Robson, 2002).

Analytical Methods

A paired sample *t* test was conducted in order to determine whether statistically significant differences existed in the library anxiety ratings and the information literacy competency ratings of the students before and after the instruction sessions (Asquith, 2008; Robson, 2002). The paired sample *t* test was utilized because the “same subject was used under two different conditions” (Argyrous, 2005, p. 280). The paired samples *t* test could not be conducted on the data from the *Information Literacy Inventory* as the data was nominal, and means cannot be calculated for nominal data (Gay, Mills, & Airasian, 2009). The results of the *Information Literacy Inventory* pre- and posttest were calculated using the frequency statistic to determine which response variable for each statement received the greatest number of responses. The frequency measure was used because the data was nominal. Further, the frequency provided a method by which percentage ranking could be used to compare the responses of the individual against the sample as a whole (Argyrous, 2005).

An analysis of variance (ANOVA) was conducted to determine whether the means of responses on the *Information Literacy Inventory* and the *Library Anxiety Scale* were statistically different among the programs of study (Business, Counseling, Education, and Nursing (Asquith, 2008; Robson, 2002). Again, the ANOVA could not be conducted on the data from *Information Literacy Inventory* pre- and posttest because the means cannot be calculated on nominal data (Gay et. al., 2009). The Scheffe post hoc comparison was conducted on the data from the *Library Anxiety Scale* to explore which of the group(s) differed from the others regarding certain variables (Argyrous, 2005). The statistical analysis was conducted using the computer software program *SPSS*.

A calculation of the descriptive statistics and frequencies, which included kurtosis and skewness, was conducted on the data from the *Faculty Perception Survey*. The kurtosis was included in order to determine the distribution of values, and the skewness was included in order to determine the symmetry of the values. A negative kurtosis statistic, or values below zero, would be determined as a relatively flat distribution (too many values are at the extremes), and positive kurtosis statistic would indicate that the values are more spread out along the distribution and are peaked, or clustered in the center (Pallant, 2010). Additionally, a positive skewness statistic would indicate the values are clustered to the left of zero at the low values, and a negative skewness statistic would indicate the values are clustered to the right of zero, or at the high end of the scale (Pallant). Further, the frequency statistic was calculated to determine which response variable for each statement received the greatest number of responses. The frequency provided a method by which percentage ranking could be used to compare the responses of the individual against the sample as a whole, and the frequency measure was used because the data was nominal (Argyrous, 2005).

Limitations

The study was relative to the graduate students and graduate faculty at one Midwestern private institution of higher education. The findings of the study may not be representative of the graduate student and graduate faculty populations in general, but were limited to the population involved in the study. Additionally, specific demographic information such as the gender of the student, last degrees earned, and number of years since the last earned degrees was not collected in this study. Further, the researcher was unable to discern where the respondents were in the program (beginning, middle, end),

which may have impacted whether the students participated in the study and how they responded to the statements on the *Information Literacy Inventory* and the *Library Anxiety Scale*. Further, the *Information Literacy Inventory* instrument was not updated to include questions related to the information-seeking behavior of students.

Chapter four presents the analysis of the data collected during the course of the current study. The conclusions, implications of the research, and recommendations for further research are also presented.

CHAPTER IV

Introduction

This study was conducted to investigate the relationship between the library anxiety of graduate students and information literacy instruction in the graduate curriculum. Additionally, the study investigated the relationship of faculty perceptions of the research skills level of graduate students, the role of information literacy in the graduate curriculum, and whether faculty were inclined to include information literacy instruction in their research-based courses. This chapter offers a reexamination of the research questions and provides a discussion and interpretation of the study results. Finally, research implications are assessed and recommendations for further study are offered.

The purpose of this study was to explore the following variables: (a) the relationship between the library anxiety and information literacy competency of graduate students, (b) the relationship between library anxiety and graduate students taking advantage of information literacy instruction opportunities, (c) the attitude of faculty toward graduate students' the place of information literacy instruction at the graduate level, and (d) the relationship between the attitude of graduate faculty toward information literacy instruction and the inclusion of information literacy instruction in their research-based courses. The study investigated the following research questions and corresponding hypotheses:

1. What is the relationship between library anxiety and general information literacy competencies?
H₁: Library anxiety will have an impact on the general information literacy competency of graduate students.
2. What relationship exists between library anxiety and graduate students taking advantage of information literacy instruction opportunities?
H₂: Information literacy instruction sessions will alleviate the intensity of library anxiety experienced by graduate students.
3. What is the attitude of faculty toward the place of information literacy in graduate programs of study?
H₃: Faculty perceive students to possess the information literacy and research skills necessary to succeed in the program.
4. What relationship exists between faculty attitude and whether information literacy instruction is provided?
H₄: Faculty perceive that information literacy instruction is applicable at the graduate level.

This study was carried out in two phases. The first phase was designed to answer Research Question One and Research Question Two and their related hypotheses, and the second phase was designed to answer Research Question Three and Research Question Four and their corresponding hypotheses. The first phase included the administration of the *Information Literacy Inventory* pre- and posttest and the *Library Anxiety Scale* pre- and posttest. An instruction session was provided between the administration of the *Information Literacy Inventory* and *Library Anxiety Scale* pretests and the *Information*

Literacy Inventory and *Library Anxiety Scale* posttests. The *Information Literacy Inventory* instrument gathered data on how graduate students evaluated themselves in relation to their possession of information literacy competencies, whether students evaluated themselves as possessing greater competency than they actually possessed, and whether any change in this self-evaluation took place on the posttest following the instruction session. Additionally, the variable of library anxiety was explored in relation to its impact on how students provided self-evaluation of both their information literacy competencies and their use of the university's library for research assignments. The determination of impact was based on the number of times responses were selected by students on the *Information Literacy Inventory* pre- and posttest, as well as the number of times the students reported having used or not used the university library for their research assignments. Statements 2 through 5 and Statement 12 from this instrument provided students with opportunities to mark as many options as applied to them and their research habits. The summaries of the results for Statements 2 through 5, and Statement 12 may be found in Tables 4 through Table 8, and Table 14. Further, students responded to a series of statements on the *Library Anxiety Scale* related to general library use, interaction with librarians, and specifically-identified research skills to determine the intensity of library anxiety of the students. The responses to the Statements on this instrument ranged from strongly disagree, to disagree, to uncertain, to agree, to strongly agree.

The second phase of the study investigated faculty attitudes toward information literacy instruction and the willingness of faculty to include information literacy

instruction as part of their course(s) at the graduate level. The faculty completed the *Faculty Perception Survey*.

Findings

Information Literacy Competency and Library Anxiety

The results of the *Information Literacy Inventory* pre- and posttest (summarized in Tables 3 through Table 35) were calculated using the frequency statistic to determine which response variable for each statement received the greatest number of responses. This frequency measure was used because the data was nominal. The averages, or means, could not be calculated for the data set (Asquith, 2008). Further, the frequency provided a method by which percentage ranking could be used to compare the responses of the individual against the sample as a whole (Argyrous, 2005). The number of students who participated in the study from University Y was 71. The sample was comprised of the students who participated in the study through the completion of the instruments through either the online delivery method or the face-to-face delivery. There was a low return rate from students who were enrolled in online courses, and the students enrolled in the post-graduate Play Therapy certificate program did not participate in the study.

The results of the *Information Literacy Inventory* pretest indicated that while many of the students reported that they did not use or had not used the university library for their research assignments the overall self-assessment of their information literacy competency was confident. The results of Statement 1: I have used the university's library ___ times for my research assignments indicated that students reported having used the university library between 0 and 100 times for their research assignments. The response reported most often on the pretest was 0 times, by 21 (29.6%) of the

respondents. The summaries of the pretest responses to Statement 1 are presented in Table 3.

The posttest revealed some changes in response between the pre- and posttest responses in the number of times students reported that they used the university library. The results of the posttest indicated that the number of times the respondent used the university library for research differed from the reported frequencies on the pretest. The frequency categories in which differences occurred included: (a) 1 time: 1 (1.4%), (b) 3 times: 2 (2.8%), (c) 4 times: 4 (5.6%), (d) 5 times: 3 (4.2%), (e) 6 times: 1 (1.4%), (f) 8 times: 1 (1.4%), (g) 15 times: 2 (2.8%), (h) 20 times: 3 (4.2%), (i) 25 times: 1 (1.4%), (j) 28 times: 1 (1.4%), and (k) 50 times: 1 (1.4%). The summaries of posttest responses to Statement 1 are presented in Table 3.

Table 3

Information Literacy Inventory Pre- and Posttest

Frequency of Response to Statement 1: I Have Used the

University's Library _____ Times for My Research

Assignments

Library						
Use	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
0		21	29.6		21	29.6
1		10	14.1		11	15.5
2		2	2.8		2	2.8
3		6	8.5		4	5.6
4		6	8.5		2	2.8
5		9	12.7		6	8.5
6		1	1.4		2	2.8
8					1	1.4
9		1	1.4		1	1.4
10		6	8.5		6	8.5
15		1	1.4		3	4.2
20		2	2.8		5	7.0
25		1	1.4		2	2.8
28					1	1.4
30		1	1.4		1	1.4
50		3	4.2		2	2.8
100		1	1.4		1	1.4
Total		71	100.0		71	100.0

Note. n = 71

For Statements 2 through 5, and for Statement 12 on the *Information Literacy Inventory*, students were given the option to mark multiple responses. Additionally, the

responses to Statements 6 through 10 were dichotomous. Students had to choose from one of two answers, and mark their selection. Finally, Statement 11 provided students with the opportunity to rate their comfort level regarding conducting the research required by the program of study by using a scale of 1 (Very Uncomfortable) to 5 (Very Comfortable). The mean was calculated on these responses to provide insight about the overall rating of the sample.

Responses to Statement 2: When I have a research assignment, I use the following to find what I need: (a) Internet, (b) Library print sources from the university's library, (c) Library print sources from other libraries, (d) Library databases through the university's library, (e) Library databases through my local library, (f) University library faculty and staff, (g) Resources from department faculty, or (h) Other provided data relating to what resources students access for their research assignments. The results of the pretest to Statement 2a: When I have a research assignment, I use the following to find what I need: (a) Internet indicated that 59 (83.1%) respondents used the Internet for their research while 12 (16.9%) did not select the Internet as a resource they use for their research assignments. The posttest results for Statement 2a indicated that 61 (85.9%) respondents used the Internet for their research assignments. The posttest result reflected an increase of 2 (2.8%) regarding the use of the Internet for their research assignments from the pretest. The summaries of pre- and posttest responses to Statement 2a are presented in Table 4.

Table 4

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 2a: When I Have a Research Assignment, I Use the Following to Find What I Need: The Internet

Student	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
Did not check		12	16.9	10		14.1
Checked		59	83.1	61		85.9
		71	100.0	71		100.0

Note. n = 71

The pretest responses to Statement 2b: When I have a research assignment, I use the following to find what I need: (b) Library print sources from the university’s library indicated that 17 (23.9%) respondents noted that they used print resources from the university’s library for the research assignments while 54 (76.1%) did not select this option. The posttest results indicated that 23 (32.4%) respondents used print resources from the university’s library for their research assignments, and 48 (67.6%) did not select this option on the posttest. The number of respondents who indicated they used print resources from the university’s library increased by 6 (8.5%) on the posttest from the pretest. The summaries of pre- and posttest responses to Statement 2b are presented in Table 5.

Table 5

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 2b: When I Have a Research Assignment, I Use the Following to Find What I Need: Library Print Resources in the University Library

Student	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
Did not check		54	76.1		48	67.6
Checked		17	23.9		23	32.4
Total		71	100.0		71	100.0

Note. n = 71

The pretest responses to Statement 2c: When I have a research assignment, I use the following to find what I need: (c) Library print sources from other libraries indicated that many students do not use print resources from other libraries as 44 (62%) did not select the option while 27 (38%) respondents noted that they used print resources from other libraries for their research assignments. The results of the posttest indicated that 59 (83.1%) students did not select the option on the posttest while 12 (16.9%) respondents noted that they used print materials from other libraries. The posttest result of those who reported having used print resource from other libraries decreased by 15 (21.1%) from the pretest. The summaries of pre- and posttest responses to Statement 2c are presented in Table 6.

Table 6

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 2c: When I Have a Research Assignment, I Use the Following to Find What I Need: Library Print Resources from Other Libraries

Student						
Response	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
Did not check		44	62.0		52	73.2
Checked		27	38.0		19	26.8
Total		71	100.0		71	100.0

Note. n = 71

The pretest responses to Statement 2d: When I have a research assignment, I use the following to find what I need: (d) Library databases through the university's library indicated that students used the library databases through the university library for their research assignments as 57 (80.3%) respondents selected this option while 14 (19.7%) did not select this option. The posttest results indicated that 59 (83.1%) respondents noted that they used the databases through the university library while 12 (16.9%) students did not select this option. The difference in the number of respondents who selected this option for Statement 2d between the pre- and posttest was 5 (7.1%). The summaries of pre- and posttest responses to Statement 2c are presented in Table 7.

Table 7

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 2d: When I Have a Research Assignment, I Use the Following to Find What I Need: Library Databases through the University's Library

Student	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
Did not check		14	19.7		12	16.9
Checked		57	80.3		59	83.1
Total		71	100.0		71	100.0

Note. n = 71

The pretest responses to Statement 2e: When I have a research assignment, I use the following to find what I need: (e) Library databases through my local library revealed that 14 (19.7%) respondents indicated that they used the databases through their local library for their research assignments while 57 (80.3%) did not select this option. The results of the posttest indicated that 18 (25.4%) respondents noted that they used the databases through their local library while 53 (74.6%) did not select this option on the posttest. The difference between the pre- and posttest in the number of respondents who reported they used the databases through their local library their research assignments was 4 (5.7%). The summaries of pre- and posttest responses to Statement 2e are presented in Table 8.

Table 8

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 2e: When I Have a Research Assignment, I Use the Following to Find What I Need: Library Databases Through My Local Library

Student						
Response	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
Did not check		57	80.3		53	74.6
Checked		14	19.7		18	25.4
Total		71	100.0		71	100.0

Note. n = 71

The pretest responses to Statement 2f: When I have a research assignment, I use the following to find what I need: (f) Library faculty and staff indicated that 17 (23.9%) respondents utilized the library faculty and staff for their research assignments while 54 (76.1%) respondents did not select this option on the survey. The posttest results indicated that 14 (19.7%) respondents utilized the library faculty and staff for their research assignments while 57 (80.3%) respondents did not select this option on the posttest. The difference between the pre- and posttest on the use of university library faculty and staff was 3 (4.2%). The summaries of pre- and posttest responses to Statement 2f are presented in Table 9.

Table 9

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 2f: When I Have a Research Assignment, I Use the Following to Find What I Need: Library Faculty and Staff

Student						
Response	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
Did not check		54	76.1		57	80.3
Checked		17	23.9		14	19.7
Total		71	100.0		71	100.0

Note. n = 71

The pretest responses to Statement 2g: When I have a research assignment, I use the following to find what I need: (g) Resources from department faculty indicated that 14 (19.7%) respondents made use of resources from the department faculty while 57 (80.3%) did not select this option. The posttest results indicated that 18 (25.4%) respondents made use of resources from department faculty while 53 (74.6%). The difference between the pre- and posttest on the use of resources from department faculty was 4 (5.7%). The summaries of pre- and posttest responses to Statement 2g are presented in Table 10.

Table 10

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 2g: When I Have a Research Assignment, I Use the Following to Find What I Need: Resources from Department Faculty

Student	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>P</i>
Did not check		57	80.3	53		74.6
Checked		14	19.7	18		25.4
Total		71	100.0	71		100.0

Note. n = 71

Finally, the pretest responses to Statement 2h: When I have a research assignment, I use the following to find what I need: (h) Other indicated that approximately 12 (16.9%) respondents provided responses while 59 (83.1%) did not provide a response. The additional resources to which the respondents indicated they refer when doing research for an assignment were grouped into four general categories: (a) resources from the student’s personal library, 4 (5.6%); (b) databases through work, 2 (2.8%); (c) resources through other university libraries, 2 (2.8%); and, (d) local bookstores, 1 (1.4%). Additionally, respondents provided responses that indicated use of resources that were listed as previous options to the statement: (a) Google (Internet), 1 (1.4%) and

(b) EBSCO/online journal databases (databases through university library/databases through my local library), 2 (2.8%). The response regarding the use of textbooks was categorized under personal library for the purpose of this study. The posttest results indicated that 13 (18.3%) respondents provided responses while 58 (81.7%) did not provide a response. The differences between the pre- and posttest included three additional statements: (a) my professor, (b) other students, and (c) what ever it takes to get it done. The summaries of pre- and posttest responses to Statement 2h are presented in Table 11 and Table 12 respectively.

Table 11

Information Literacy Inventory Pretest Frequency of Responses to Statement 2h:

When I Have a Research Assignment, I Use the Following to Find What I Need:

Other

Student Response	<i>f</i>	<i>p</i>
No Response	59	83.1
Books of my own	1	1.4
EBSCO	1	1.4
Google	1	1.4
Library at a nearby university	1	1.4
Library databases and resources through my employer	1	1.4
Library databases at other schools	1	1.4
Library databases at work	1	1.4
Local bookstores	1	1.4
My books	1	1.4
Online journal databases	1	1.4
Personal library	1	1.4
Textbooks	1	1.4
Total	71	100.0

Note. n = 71

Table 12

Information Literacy Inventory Posttest Frequency of Responses to Statement 2h:

When I Have a Research Assignment, I Use the Following to Find What I Need:

Other

Student Response	<i>f</i>	<i>p</i>
No Response	58	81.7
Books I have	1	1.4
EBSCO	2	2.8
Home library	1	1.4
Library at a nearby university	1	1.4
Library databases at work	1	1.4
Library databases through work	1	1.4
My professor	1	1.4
Library at a nearby medical facility	1	1.4
Textbooks	2	2.8
Other students	1	1.4
Whatever it takes to get it done	1	1.4
Work library	1	1.4
Total	71	100.0

Note. n = 71

Responses to Statement 3: If you use university library databases for your research assignments, do you access them: (a) Inside the library building, (b) On campus, (c) From home, or (d) I have not as yet used library databases provided data relating to

the location of students when they access the databases that are available through the university's library. The pretest responses to Statement 3a: If you use university library databases for your research assignments, do you access them: (a) Inside the library building indicated that 23 (32.4%) respondents noted that they accessed the library databases from inside the library building while 48 (67.6%) did not select this option not select this option. The posttest responses indicated that 21 (29.6%) respondents noted that they accessed the library databases from inside the library building while 50 (70.4%) did not select this option. The difference between the pre- and posttest was 2 (2.8%) of those who selected this option on the posttest. The summaries of pre- and posttest responses to Statement 3a are presented in Table 13.

Table 13

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 3a: If You Used the University Library's Databases for Your Research Assignments, Do You Access Them: (a) Inside the Library Building

Student	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
Did not check		48	67.6		50	70.4
Checked		23	32.4		21	29.6
Total		71	100.0		71	100.0

Note. n = 71

The pretest responses to Statement 3b: If you use university library databases for your research assignments, do you access them: (b) On campus indicated that 22 (31%) respondents noted that they accessed the databases from on campus while 49 (69%) did not select this option. The posttest results indicated that 22 (31%) accessed the library databases from on campus while 49 (69%) did not select this option. There was no difference in response between the pre- and posttest for this option on Statement 3. The summaries of pre- and posttest responses to Statement 3b are presented in Table 14.

Table 14

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 3b: If You Used the University Library's Databases for Your Research Assignments, Do You Access Them: (b) On Campus

Student Response	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>P</i>
Did not check		49	69.0		49	69.0
Checked		22	31.0		22	31.0
Total		71	100.0		71	100.0

Note. n = 71

The pretest responses to Statement 3c: If you use university library databases for your research assignments, do you access them: (c) From home indicated that 62 (87.3%) respondents noted that they accessed the library databases from home while 9 (12.7%) did not select this option. The posttest results indicated that 60 (84.5%) respondents noted that they accessed the library databases from home while 11 (15.5%) did not select this option. This is a difference of 2 (2.8%) between those who selected the “from home”

option on the posttest than did on the pretest. The summaries of pre- and posttest responses to Statement 3c are presented in Table 15.

Table 15

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 3c: If You Used the University Library's Databases for Your Research Assignments, Do You Access Them: (c) From Home

Student Response	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>P</i>
Did not check		9	12.7		11	15.5
Checked		62	87.3		60	84.5
Total		71	100.0		71	100.0

Note. n = 71

The pretest responses to Statement 3d: If you use university library databases for your research assignments, do you access them: (d) I have not as yet used library *databases* indicated that 5 (7%) have not as yet used the library databases while 66 (93%) did not select this option. The posttest results indicated that 5 (7%) respondents noted that they have as yet to use the library databases, and approximately 66 (93%) of respondents did not select this option. There was not a difference in responses between the pre- and posttest. The summaries of pre- and posttest responses to Statement 3b are presented in Table 16.

Table 16

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 3d: If You Used the University Library's Databases for Your Research Assignments, Do You Access Them: (d) I Have Not as Yet Used Library Databases

Student	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
Did not check		66	93.0		66	93.0
Checked		5	7.0		5	7.0
Total		71	100.0		71	100.0

Note. n = 71

Responses to Statement 4: I am more likely to find authoritative information on a research topic at which of the following Internet sites: (a) .com, (b) .gov, c).org, or (d) .edu provided data relating to the Internet domain perceived to provide authoritative information. The pretest responses to Statement 4a: I am more likely to find authoritative information on a research topic at which of the following Internet sites: (a) .com indicated that 11 (15.5%) respondents selected the “dot com” option as a source of authoritative information on the Web while 60 (84.5%) did not select the “dot com” option. The posttest results indicated that 7 (9.9%) respondents selected “dot com” as a source of authoritative information on the Web while 64 (90.1%) did not select this option. The difference in responses between the pre- and posttest was 4 (5.6%) who

selected the “dot com” option. The summaries of pre- and posttest responses to Statement 4a are presented in Table 17.

Table 17

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 4a: I Am More Likely to Find Authoritative Information on a Research Topic at Which of the Following Internet Sites: (a) .com

Student	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
Did not check		60	84.5	64	90.1	
Checked		11	15.5	7	9.9	
Total		71	100.0	71	100.0	

Note. n = 71

The pretest responses to Statement 4b: I am more likely to find authoritative information on a research topic at which of the following Internet sites: (b) .gov indicated that 48 (67.6%) respondents selected the “dot gov” option as a source of authoritative information on the Web while 23 (32.4%) did not select this option. The posttest results indicated that 51 (71.8%) respondents selected “dot gov” as a source of authoritative information on the Web while 20 (28.2%) did not select this option. The difference in responses between the pre- and posttest was 3 (4.2%). The summaries of pre- and posttest responses to Statement 4b are presented in Table 18.

Table 18

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 4b: I Am More Likely to Find Authoritative Information on a Research Topic at Which of the Following Internet Sites: (b) .gov

Student	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
Did not check		23	32.4	20	28.2	
Checked		48	67.6	51	71.8	
Total		71	100.0	71	100.0	

Note. n = 71

The pretest responses to Statement 4c: I am more likely to find authoritative information on a research topic at which of the following Internet sites: (c) .org indicated that 41 (57.7%) respondents selected the “dot org” option as a source of authoritative information on the Web while 30 (42.3%) did not select this option. The posttest results indicated that 33 (46.5%) respondents selected “dot org” as a source of authoritative information on the Web while 38 (53.5%) did not select this option. The difference in responses between the pre- and posttest was 8 (11.2%). The summaries of pre- and posttest responses to Statement 4c are presented in Table 19.

Table 19

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 4c: I Am More Likely to Find Authoritative Information on a Research Topic at Which of the Following Internet Sites: (c) .org

Student						
Response	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
Did not check		30	42.3		38	53.5
Checked		41	57.7		33	46.5
Total		71	100.0		71	100.0

Note. n = 71

The pretest responses to Statement 4d: I am more likely to find authoritative information on a research topic at which of the following Internet sites: (d) .edu indicated that 62 (87.3%) respondents selected the “dot edu” option as a source of authoritative information on the Web while 9 (12.7%) did not select this option. The posttest results indicated that 67 (94.4%) respondents selected “dot edu” as a source for authoritative information on the Web while 4 (5.6%) did not select “dot edu” as an option. The difference in responses between the pre- and posttest was 5 (7.1%). The summaries of pre- and posttest responses to Statement 3b are summarized in Table 20.

Table 20

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 4d: I Am More Likely to Find Authoritative Information on a Research Topic at Which of the Following Internet Sites: (d) .edu

Student	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
Did not check		16	22.5	13	18.3	
Checked		55	77.5	58	81.7	
Total		71	100.0	71	100.0	

Note. n = 71

Responses to Statement 5: Useful ways to evaluate the reliability or authority of a source are to note: (a) Author, (b) Publisher, (c) Date of Publication, or (d) None of the Above provided data relating to the criteria used determine the reliability or authority of a source. The responses to Statement 5a: Useful ways to evaluate the reliability or authority of a source are to note: (a) Author indicated that 55 (77.5%) respondents selected Author as a reference point by which to determine the authority and reliability of information while 16 (22.5%) did not select Author as an option. The posttest results indicated that 58 (81.7%) respondents selected Author as a means to determine authority and reliability of a resource while 13 (18.3%) did not select this option. There was a difference of 3 (4.2%) respondents who selected Author between the pre- and posttest. The summaries of pre- and posttest responses to Statement 5a are presented in Table 21.

Table 21

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 5a: Useful Ways to Evaluate the Reliability or Authority of a Source are to Note: (a) Author

Student						
Response	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
Did not check		16	22.5		18	25.4
Checked		55	77.5		53	74.6
Total		71	100.0		71	100.0

Note. n = 71

The pretest responses to Statement 5b: Useful ways to evaluate the reliability or authority of a source are to note: (b) Publisher indicated that 47 (66.2%) respondents selected Publisher as a reference point by which to determine the authority and reliability of a source while 24 (33.8%) did not select Publisher as an option. The posttest results indicated that 53 (74.6%) respondents selected Publisher as a response while 18 (25.4%) did not select this response. A difference in responses between the pre- and posttest of 6 (8.4%) respondents was noted regarding the selection of the Publisher option. The summaries of pre- and posttest responses to Statement 5b are presented in Table 22.

Table 22

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 5b: Useful Ways to Evaluate the Reliability or Authority of a Source are to Note: (b) Publisher

Student						
Response	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
Did not check		24	33.8		18	25.4
Checked		47	66.2		53	74.6
Total		71	100.0		71	100.0

Note. n = 71

The pretest responses to Statement 5c: Useful ways to evaluate the reliability or authority of a source are to note: (c) Date of Publication indicated that 48 (67.6%) respondents selected Date of Publication as a reference point to determine the authority and reliability of information while 23 (32.4%) respondents did not select Date of Publication as an option. The posttest results indicated that 57 (80.3%) respondents selected Date of Publication as a response while 14 (19.7%) respondents did not select Date of Publication as a response. The difference in responses between the pre- and posttest on the selection of the Date of Publication option was 9 (12.7%). The summaries of pre- and posttest responses to Statement 5c are presented in Table 23.

Table 23

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 5c: Useful Ways to Evaluate the Reliability or Authority of a Source are to Note: (c) Date of Publication

Student	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
Did not check		23	32.4	14	19.7	
Checked		48	67.6	57	80.3	
Total		71	100.0	71	100.0	

Note. n = 71

The pretest responses to Statement 5d: Useful ways to evaluate the reliability or authority of a source are to note: (d) None of the Above indicated that 9 (12.7%) respondents selected None of the Above while 62 (87.3%) did not select None of the Above as an option. The posttest results indicated that 5 (7%) respondents selected the None of the Above option indicating they did not believe that any of the preceding options were viable for determining the authority and reliability of a source while 66 (93%) did not select None of the Above as an option. The difference in responses between the pre- and posttest of respondents who selected the None of the Above” response was 4 (5.7%). The summaries of pre- and posttest responses to Statement 5d are presented in Table 24.

Table 24

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 5d: Useful Ways to Evaluate the Reliability or Authority of a Source are to Note: (d) None of the Above

Student						
Response	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
Did not check		62	87.3		66	93.0
Checked		9	12.7		5	7.0
Total		71	100.0		71	100.0

Note. n = 71

The next three questions on the *Information Literacy Inventory* pre- and posttest collected data regarding the variable of the appropriate and ethical use of information. Students marked either a true or false response depending on whether they agreed or disagreed with the Statement.

The pretest responses to Statement 6: Information posted on the Internet is available for fair use and is not covered by copyright restrictions indicated that 7 (9.9%) respondents selected the true response, and 64 (90.1%) selected the false response. The posttest results indicated that 9 (12.7%) respondents selected true as a response, and 62 (87.3%) selected the false response. The results shifted from the pretest to the posttest as 2 (2.8%) additional respondents selected the true response on the posttest than did on the

pretest. The summaries of pre- and posttest responses to Statement 6 are presented in Table 25.

Table 25

Information Literacy Inventory Pre- and Posttest

Frequency of Responses to Statement 6: Information

Posted on the Internet is Available for Fair Use and is Not

Covered by Copyright Restrictions

Student	Response	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
	True		7	9.9		9	12.7
	False		64	90.1		62	87.3
	Total		71	100.0		71	100.0

Note. n = 71

The pretest responses to Statement 7: As long as I paraphrase the ideas and words of an author, I do not have to cite the author and his work in my research paper indicated that 1 (1.4%) respondent selected the true response, and 70 (98.6%) respondents selected the false. The posttest results indicated that 71 (100%) of the respondents selected the false response. The difference in responses between the pre- and posttest was 1 (1.4%) student who selected true on the pretest, but selected false on the posttest. The summaries of pre- and posttest responses to Statement 7 are presented in Table 26.

Table 26

Information Literacy Inventory Pre- and Posttest

Frequency of Responses to Statement 7: As Long as I

Paraphrase the Ideas and Words of an Author, I Do Not

Have to Cite the Author and His Work in My Research

Paper

Student	Response	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>P</i>
	True		1	1.4		0	0
	False		70	98.6		71	100.0
	Total		71	100.0		71	100.0

Note. n = 71

The pretest responses to Statement 8: Only print materials used in my research need to be cited in a note or a bibliography indicated that 1 (1.4%) students selected the true response, and 70 (98.6%) respondents selected the false response. The posttest results indicated that 6 (8.5%) respondents selected the true response, and 65 (91.5%) students selected the false response. The difference in responses between the pre- and posttest was of 8 (11.2%). The summaries of pre- and posttest responses to Statement 8 are presented in Table 27.

Table 27

Information Literacy Inventory Pre- and Posttest

Frequency of Responses to Statement 8: Only Print

*Materials Used in My Research Need to be Cited in a Note
or a Bibliography*

Student						
Response	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>P</i>
True		1	1.4		9	12.7
False		70	98.6		62	87.3
Total		71	100.0		71	100.0

Note. n = 71

Statements 9 and 10 collected data regarding the students' experiences with citation styles. The students were asked to mark either a yes or no if they had previous experience with either the Turabian citation style or the citation style of the American Psychological Association (APA). The citation style used by the programs involved in the study was APA. The students in these programs were required to use APA for all course work and research projects. The Modern Language Association (MLA) style was not provided as an option on this survey because this style is primarily used by Humanities-related programs; Turabian and APA are used most often by professional programs.

The pretest responses to Statement 9: I have used the Turabian style manual indicated that 20 (28.2%) respondents noted that they used the Turabian citation style,

and 51 (71.8%) had not. The posttest results indicated that 14 (19.7%) respondents had used the Turabian citation style, and 57 (80.3%) respondents had not used the Turabian citation style. The difference in responses between the pre- and posttest was 6 (8.4%).

The summaries of pre- and posttest responses to Statement 9 are presented in

Table 28.

Table 28

Information Literacy Inventory Pre- and Posttest

Frequency of Responses to Statement 9: I Have Used the

Turabian Style Manual

Student	Response	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>P</i>
	Yes		20	28.2		14	19.7
	No		51	71.8		57	80.3
	Total		71	100.0		71	100.0

Note. n = 71

Responses to Statement 10: I have used the APA style manual provided data relating to the respondents' previous experience with the APA citation style. The pretest responses to Statement 10 indicated that 65 (91.5%) respondents had used the APA citation style, and 6 (8.5%) had not. The results of the posttest indicated that 59 (83.1%) respondents had used the APA citation style, and 12 (16.9%) had not. The difference in responses between the pre- and posttest was 6 (8.5%). The summaries of pre- and posttest responses to Statement 10 are presented in Table 29.

Table 29

Information Literacy Inventory Pre- and Posttest

*Frequency of Responses to Statement 10: I Have Used the
APA Style Manual*

Student	Response	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>P</i>
	Yes		65	91.5		59	83.1
	No		6	8.5		12	16.9
	Total		71	100.0		71	100.0

Note. n = 71

Statement 11: How would you rate your comfort level in conducting the research required in this program asked students to rate their comfort level in doing the research that is required in their program. Students were asked to use a scale of 1 (Very Uncomfortable) to 5 (Very Comfortable). The data collected for this statement was analyzed by conducting a calculation of the mean. The outcome would provide insight about where the sample as a whole was rated on the five-point scale in relation to the comfort level of conducting the required research in the program. The pretest responses to Statement 11 revealed that $M = 3.49$, $SD = 1.012$ (Table 30), indicating that the overall rating of the respondents was between the Unsure and Comfortable ratings. The posttest results revealed that $M = 3.58$, $SD = .822$ (Table 31), indicating that the overall rating of the respondents was between the Unsure and Comfortable ratings, but moving closer to the Comfortable spectrum.

Table 30

Information Literacy Inventory Pre- and Posttest Calculated Mean of Responses to Statement 11: How Would You Rate Your Comfort Level in Conducting the Research Required in This Program

Student Response	Pre	<i>M</i>	<i>s</i>	Post	<i>M</i>	<i>S</i>
Rate Comfort		3.49	1.012		3.58	.822

Note. n = 71

Responses to Statement 12: What information skills do you need the most help with?: (a) Locating print materials, (b) Using library databases, (c) Finding on-target Web sites, or (d) Other of the Information Literacy Inventory provided data relating to additional topics in which respondents indicated they would further instruction. The pretest responses to Statement 12a: What information skills do you need the most help with?: (a) Locating print materials indicated that 29 (40.8%) respondents noted that they would like further instruction on how to locate print materials while 42 (59.2%) did not select this option. The posttest results indicated that 31 (43.7%) respondents noted that they would like more instruction on how to locate print materials while 40 (56.3%) did not select this option. The difference in responses between the pre- and posttest was 2 (2.9%). The summaries of pre- and posttest responses to Statement 12a are presented in Table 31.

Table 31

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 12a: What Information Skills Do You Need the Most Help With?: (a) Locating print materials

Student						
Response	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>P</i>
Did not check		42	59.2		40	56.3
Checked		29	40.8		31	43.7
Total		71	100.0		71	100.0

Note. n = 71

The pretest responses to Statement 12b: What information skills do you need the most help with?: (b) Using library databases indicated that 31 (43.7%) respondents noted that they would like further instruction about using the library databases while 40 (56.3%) did not select this option. The posttest results indicated that 28 (39.4%) respondents noted that they would like further instruction about using the library databases while 43 (40.6%) did not select this option. The difference in responses between the pre- and posttest was 3 (4.2%). The summaries of pre- and posttest responses to Statement 12b are presented in Table 32.

Table 32

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 12b: What Information Skills Do You Need the Most Help With?: (b) Using Library Databases

Student Response	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
Did not check		40	56.3		43	60.6
Checked		31	43.7		28	39.4
Total		71	100.0		71	100.0

Note. $n = 71$

The pretest responses to Statement 12c: What information skills do you need the most help with?: (c) Finding on-target Web sites indicated that 31 (43.7%) respondents noted that they would like further instruction on locating on-target Web sites while 40 (56.3%) did not select this option. The results of the posttest indicated that 25 (35.2%) respondents noted that they would like further instruction on locating on-target Web sites while 46 (64.8%) did not select this option. The difference in responses between the pre- and posttest was 6 (8.5%). The summaries of pre- and posttest responses to Statement 12c are presented in Table 33.

Table 33

Information Literacy Inventory Pre- and Posttest Frequency of Responses to Statement 12c: What Information Skills Do You Need the Most Help With?: (c) Finding On-target Web Sites

Student Response	Pre	<i>f</i>	<i>p</i>	Post	<i>f</i>	<i>p</i>
Did not check		40	56.3		46	64.8
Checked		31	43.7		25	35.2
Total		71	100.0		71	100.0

Note. $n = 71$

The pretest responses to Statement 12d: What information skills do you need the most help with?: (d) Other indicated that 9 (12.6%) respondents provided other topics in which they would like further instruction. The responses provided included such topics as time management, citing with APA, knowing how to contact experts, knowing which print resources to use, subject-specific information, how to formulate searches in databases, and asking librarians. The results of the posttest indicated that 8 (11.2%) respondents provided other topics in which they would like further instruction. The responses provided included such topics as interlibrary loan process, citing different types of sources, and simple library orientation. The summaries of pre- and posttest responses to Statement 12d are presented in Table 34 and 35 respectively.

Table 34

Information Literacy Inventory Pretest Frequency of Responses to Statement

12d: What Information Skills Do You Need the Most Help With?:

(d) Other

Student Response	<i>f</i>	<i>p</i>
No Response	62	87.3
Asking librarian	1	1.4
Contacting experts	1	1.4
Determining which print materials are good to use	1	1.4
Feel comfortable with (a – c)	1	1.4
Format and referencing	1	1.4
Subject-specific information	1	1.4
Time management	1	1.4
To formulate searches to get what I need	1	1.4
Writing using APA style	1	1.4
Total	71	100.0

Note. n = 71

Table 35

*Information Literacy Inventory Posttest Frequency of Responses to Statement**I2d: What Information Skills Do You Need the Most Help With?: (d) Other*

Student Response	<i>f</i>	<i>p</i>
No Response	63	88.7
APA	1	1.4
Citing different types of sources	1	1.4
Contacting experts	1	1.4
EBSCO will get easier as I use it more	1	1.4
Interlibrary loan process	1	1.4
More current resources than textbooks	1	1.4
Searches	1	1.4
Simple library orientation	1	1.4
Total	71	100.0

Note. $n = 71$

An analysis of variance (ANOVA) could not be conducted on the data from the *Information Literacy Inventory* as means cannot be calculated on nominal data (Gay et al., 2009).

Library Anxiety Scale Pre- and Posttest

The *Library Anxiety Scale* pre- and posttest collected data regarding students' attitudes in relation to their interactions with the university librarians, library resources,

and library facility to determine whether a student's use, or non-use, of these research resources may be related to the students' experiences with library anxiety, and whether information literacy instruction would have an effect on the students' library anxiety. According to Bostick (1992), who designed this instrument, these variables are identified as contributing to the library anxiety of students, and may be categorized as:

(a) affective barriers, (b) barriers with staff, and (c) knowledge of the library barriers.

*Library Anxiety Scale Paired Samples *t* Test*

A paired samples *t* test was conducted to compare the ratings on the *Library Anxiety Scale* pretest to the ratings on the posttest (Table 36 and Table 36, see Appendix E). A statistically significant difference between the ratings of the two tests would lead to the hypothesis being retained as there would be evidence to support a relationship between the variables being measured. The paired samples *t* test revealed that a statistically significant difference occurred between respondent ratings between the pre- and posttest on Statement 29: I want to learn to do my own research: $df = 70$; $p = 1.994$; $t = -8.341$; $\alpha = .05$. However, analysis of the overall ratings on statements between the pre- and posttest revealed no statistically significant differences.

Library Anxiety Scale Analysis of Variance (ANOVA)

An analysis of variance (ANOVA) was conducted to explore whether differences existed between the four graduate programs regarding how the students responded to the statements on the *Library Anxiety Scale* pre- and posttest. A one-way between-groups analysis of variance was conducted to explore the impact of library anxiety on graduate students, as measured by the *Library Anxiety Scale* pretest. Participants were divided into four groups according to the program in which they were enrolled (Group 1: Master of

Arts, Counseling; Group 2: Master of Business Administration and Master of Arts, Organizational Administration; Group 3: Master of Science, Nursing; and, Group 4: Master of Education). A statistically significant difference occurred for the four groups at the $p < .05$ level in the ratings of Statement 13: I enjoy learning new things about the library: $f(3, 67) = 5.1, p = .003$. The actual mean difference in mean ratings between groups was large. The effect size, calculated using eta squared, was .19. The effect size explains the strength of the relationship between variables. A large positive effect size indicates an effective treatment, or intervention (Gay et al., 2009). Post hoc comparisons using the Scheffe test indicated that the mean rating for Group 2 ($M = 2.75, SD = 1.035$) was statistically significant from Group 3 ($M = 4.33, SD = .492$).

The mean ratings of Group 1 ($M = 3.48, SD = 1.023$) and Group 4 ($M = 4.00, SD = 1.000$) were not statistically significant from either Group 2 or Group 3 (Table 38 through Table 39, in Appendix (F)).

Additionally, the *Library Anxiety Scale* posttest ANOVA indicated that a statistically significant difference at the $p < .05$ level in the ratings of Statement 5: The librarians don't have time to help me because they're always on the telephone, and Statement 12: The reference librarians are unapproachable. A statistically significant difference occurred at the $p < .05$ level for the four groups in relation to Statement 5: $f(3, 67) = 3.4, p = .022$; and, Statement 12: $f(3, 67) = 3.8, p = .013$. The actual mean difference in mean ratings between groups was large. The effect size, calculated using eta squared, was .13 for Statement 5; and .15 for Statement 12. The effect size explains the strength of the relationship between variables. A large positive effect size indicates an effective treatment, or intervention (Gay et al., 2009). Post hoc comparisons using the

Scheffe test indicated that the mean rating for Group 3 ($M = 1.67, SD = .778$) was statistically significant from Group 4 ($M = 2.86, SD = .690$) for Statement 5: The librarians don't have time to help me because they're always on the telephone, and the mean rating for Group 2 ($M = 1.25, SD = .669$) was statistically significant from Group 4 ($M = 2.43, SD = .787$) for Statement 12: The reference librarians are unapproachable (Table 41 through Table 43, see Appendix G).

The analysis of both the *Information Literacy Inventory* pre- and posttest and the *Library Anxiety Scale* pre- and posttest did not provide statistically significant results that provided conclusive evidence that library anxiety had an effect on how students rated their information literacy competency. Therefore, regarding Research Question One and its related hypothesis:

What is the relationship between library anxiety and general information literacy competencies?

H₁: Library anxiety will have an impact on the general information literacy competencies of graduate students.

The hypothesis was not proven.

Additionally, a statistically significant difference did not exist between the overall ratings to statements on the *Library Anxiety Scale* pre- and posttest, indicating that information literacy instruction did not have an impact on the overall library anxiety of graduate students. Therefore, regarding Research Question Two and its related hypothesis:

What relationship does library anxiety have on graduate students taking advantage of information literacy instruction opportunities?

H₂: Information literacy instruction sessions will alleviate the intensity of library anxiety experienced by graduate students.

The data was inconclusive, and the hypothesis was not proven. While respondents indicated areas on the *Information Literacy Inventory* pre- and posttest in which they would like further instruction, there was no indication that they would seek out or attend future instruction sessions (Table 31 through Table 35).

Faculty Perception Survey

The variables explored in the second part of the study included: (a) the perceptions of the faculty teaching in the four graduate programs regarding the students' research skills, (b) the perceptions of the faculty regarding the impact that past information literacy instruction sessions had on the students' research skills, and (c) the relationship between the attitude of graduate faculty toward information literacy instruction and the inclusion of information literacy instruction in their research-based courses. The *Faculty Perception Survey* was administered a single time to the faculty teaching in the four graduate programs at University Y. In October 2010, the electronic survey was made available to the faculty through SurveyMonkey®. Fifteen graduate faculty participated in the study through completing the online survey. The sample was comprised of the faculty who participated in the study through the completion of the survey. There was a low return rate of surveys from the faculty. A calculation of the descriptive statistics and frequencies, which included kurtosis and skewness, was conducted on the data. The kurtosis was included in order to determine the distribution of values, and the skewness was included in order to determine the symmetry of the values. A negative kurtosis statistic, or values below zero, would be determined as a relatively

flat distribution (too many values are at the extremes), and positive kurtosis statistic would indicate that the values are more spread out along the distribution and are peaked, or clustered in the center (Pallant, 2010). Additionally, a positive skewness statistic would indicate the values are clustered to the left of zero at the low values, and a negative skewness statistic would indicate the values are clustered to the right of zero, or at the high end of the scale (Pallant). The results of the *Faculty Perception Survey* descriptive statistics analysis are summarized below:

Statement 1: Assignments requiring library research are a regular part of the courses I teach: (a) Every, (b) Most, (c) Some, (d) Few, (e) None, or (f) N/A
 $M = 2.60$, $SD = 1.682$, kurtosis = $-.775$, skew = $.580$

Statement 2: Library instruction is a regular part of the courses I teach: (a) Every, ((b) Most, (c) Some, ((d) Few, (e) None, or (f) N/A
 $M = 3.80$, $SD = 1.207$, kurtosis = $.632$, skew = 1.053

Statement 3: I have included library instruction in my undergraduate courses in the past and found it had the following impact on my students' research process: (a) Improved, (b) Made No Difference, (c) Confused My Students' Understanding of the Research Process, or (d) N/A

All of the graduate faculty who responded to the survey provided an N/A response to Statement 3 because it asked about the inclusion of library instruction in undergraduate courses in which the faculty may teach. The variable that was explored during this part of the study was on whether library, or information literacy instruction, was included in the graduate courses. Singh (2005) originally administered this

instrument to faculty teaching in graduate and undergraduate Communications and Journalism programs of study.

Statement 4: I have included library instruction in my graduate courses in the past and found it: (a) Improved, (b) Made No Difference, (c) Confused My Students' Understanding of the Research Process, or (d) N/A

$M = 2.47$, $SD = 1.552$, kurtosis = .042, skew = .931

Statement 5: Our college/school/division/department has a library liaison who acts as a subject specialist in support of our program/courses: (a) Agree, (b) Disagree, (c) Do Not Know

$M = 2.20$, $SD = .941$, kurtosis = -1.857, skew = -.431

Statement 6: Given these standards, I would say my students are information literate: (a) All, (b) Most, (c) Some, (d) Few, (e) None, (f) N/A, or (g) Cannot Judge

$M = 2.80$, $SD = .775$, kurtosis = -1.117, skew = .383

Statement 7: I would categorize the research skills of my students as:

(a) Excellent, (b) Strong, (c) Adequate, (d) Poor, (e) N/A, or (f) Cannot Judge

$M = 3.33$, $SD = .976$, kurtosis = 3.231, skew = 1.340

Statement 8: My students are able to communicate visually: interpret visual media and create meaningful visuals (a) Excellent, (b) Strong, (c) Adequate, (d) Poor, (e) N/A, or (f) Cannot Judge

$M = 3.13$, $SD = 1.407$, kurtosis = .809, skew = .972

Statement 9: My students are able to conceptualize and formulate good questions:

(a) Excellent, (b) Strong, (c) Adequate, (d) Poor, (e) N/A, or (f) Cannot Judge

$M = 2.67$ $SD = 1.113$, kurtosis = 5.439, skew = 2.207

Statement 10: My students display solid time management skills by readily

meeting course requirements within deadlines: (a) All, (b) Most, (c) Some, (d)

Few, (e) None, (f) N/A, or (g) Cannot Judge

$M = 2.80$ $SD = .862$, kurtosis = -1.545, skew = .433

Statement 11: My students display sound critical thinking skills: (a) All, (b) Most,

(c) Some, (d) Few, (e) None, (f) N/A, or (g) Cannot Judge

$M = 2.33$ $SD = .488$, kurtosis = -1.615, skew = .788

Statement 12: My students apply analysis and original thought to existing

information to create new information: (a) All, (b) Most, (c) Some, (d) Few, (e)

None, (f) N/A, or (g) Cannot Judge

$M = 2.53$ $SD = .516$, kurtosis = -2.308, skew = -.149

Statement 13: My students are comfortable using computers for information

gathering and data manipulation: (a) All, (b) Most, (c) Some, (d) Few, (e) None,

(f) N/A, or (g) Cannot Judge

$M = 2.80$, $SD = 1.082$, kurtosis = 5.024, skew = 2.013

The original survey administered by Singh (2005) had two items labeled 12.

The second item 12 is item 13 on the survey used in the current study.

Additionally, the second item 12 on the original survey had a reliability issue as it requested a response on two differing variables (A. M. Singh, personal communication, May 13, 2010), making it difficult for the responder to know which variable to choose,

and difficult for the researcher in knowing which variable was being considered by the respondent.

Statement 14: My students have an understanding of how information is produced, organized, and disseminated: (a) All, (b) Most, (c) Some, (d) Few, (e) None, (f) N/A, or (g) Cannot Judge

$M = 2.33$, $SD = 1.047$, kurtosis = 12.822, skew = 3.531

Statement 15: My students have an understanding of how information is organized into disciplines and subject fields: (a) All, (b) Most, (c) Some, (d) Few, (e) None, (f) N/A, or (g) Cannot Judge

$M = 2.60$, $SD = 1.056$, kurtosis = 8.173, skew = 2.640

Statement 16: My students understand how professionals working in their area of study use information: (a) All, (b) Most, (c) Some, (d) Few, (e) None, (f) N/A, or (g) Cannot Judge

$M = 2.40$, $SD = 1.121$, kurtosis = 8.222, skew = 2.568

Statement 17: My students confer with faculty to identify information resources and processes used in the field: (a) All, (b) Most, (c) Some, (d) Few, (e) None, (f) N/A, or (g) Cannot Judge

$M = 2.73$, $SD = 1.100$, kurtosis = 5.574, skew = 1.724

Statement 18: My students understand that research is a strategic process and approach it as such: (a) All, (b) Most, (c) Some, (d) Few, (e) None, (f) N/A, or (g) Cannot Judge

$M = 2.60$, $SD = 1.242$, kurtosis = 3.224, skew = 1.414

Statement 19: My students know that research methodologies vary and apply the appropriate method as necessary: (a) All, (b) Most, (c) Some, (d) Few, (e) None, (f) N/A, or (g) Cannot Judge

$M = 3.27$, $SD = .961$, kurtosis = 4.199, skew = 1.612

Statement 20: My students know where to find data and information in traditional print reference resources: (a) All, (b) Most, (c) Some, (d) Few, (e) None, (f) N/A, or (g) Cannot Judge

$M = 2.87$, $SD = 1.187$, kurtosis = 2.572, skew = 1.179

Statement 21: My students know how to find data and information in electronic databases and on the World Wide Web: (a) All, (b) Most, (c) Some, (d) Few, (e) None, (f) N/A, or (g) Cannot Judge

$M = 2.53$, $SD = 1.246$, kurtosis = 3.566, skew = 1.575

Statement 22: My students are able to apply evaluative criteria to, and select quality information from, the World Wide Web: (a) All, (b) Most, (c) Some, (d) Few, (e) None, (f) N/A, or (g) Cannot Judge

$M = 2.87$, $SD = 1.125$, kurtosis = 3.932, skew = 1.337

Statement 23: My students can discriminate between scholarly and non-scholarly information sources: (a) All, (b) Most, (c) Some, (d) Few, (e) None, (f) N/A, or (g) Cannot Judge

$M = 3.13$, $SD = 1.126$, kurtosis = 1.576, skew = 1.126

Statement 24: My students consistently cite materials using the appropriate citation style: (a) All, (b) Most, (c) Some, (d) Few, (e) None, (f) N/A, or (g) Cannot Judge

$M = 2.93$, $SD = 1.033$, kurtosis = 5.264, skew = 1.944

Statement 25: My students understand cultural, historical, literary, musical, philosophical, political, and social allusions and references that would be considered common knowledge to individuals on their educational level: (a) All, (b) Most, (c) Some, (d) Few, (e) None

$M = 2.47$, $SD = .516$, kurtosis = -2.308, skew = .149

Statement 26: My students are actively, intellectually engaged in class and their participation drives the discourse: (a) All, (b) Most, (c) Some, (d) Few, (e) None

$M = 2.40$, $SD = .507$, kurtosis = -2.094, skew = .455

The descriptive statistics provide an indicator of which category described the overall perception of graduate faculty in relation to student research competency, and whether the data was evenly distributed or skewed.

The following provides a summary of the open-ended responses to Statement 27:

Please list some information seeking skills a graduate student should have:

Response 1: Strong knowledge of how to access library database, find research articles pertinent to their study, and know how this research was conducted.

Response 2: Familiarity with Boolean logic, and knowledge of key words.

Response 3: Library database searches, difference between primary sources and on-line "free" sources. How to write!

Response 4: Being able to critically analyze the research once they locate it. Being able to search library databases for scholarly research vs. "just surfing the web."

Response 5: How to use an online database effectively.

Response 6: The ability to find resources online and determine which are credible or not.

Response 7: Being able to identify credible, scholarly resources. Using those resources appropriately for support of their research. Being able to use that information to formulate essential questions.

Five (71%) faculty indicated that an important skill for graduate students is to know how to search the online databases. This response may be compared with the result of response to Statement 21: My students know how to find data and information in electronic databases and on the World Wide Web as the mean indicated that the responses typically fell between the Most and Some spectrums.

Faculty responses to Statement 1: Assignments requiring library research are a regular part of the courses I teach: (a) Every, (b) Most, (c) Some, (d) Few, (e) None, or (f) N/A, which gathered data regarding the frequency of research assignments in their courses. The responses to Statement 1 on the *Faculty Perception Survey* revealed that 6 (40%) of respondents indicated that Every course they teach requires a library-research assignment; 2 (13.3%) indicated that Most of the courses they teach requires a library-research assignment; 2 (13.3%) indicated that Some of their courses require a library-research assignment; 3 (20%) indicated that Few of their courses require a library-research assignment; 1 (6.7%) indicated that None of their courses require a library-research assignment; and, 1 (6.7%) selected the N/A response to the statement. The summary of responses to Statement 1 is presented in Table 44.

Table 44

Faculty Perception Survey Frequency of Response to Statement 1: Assignments requiring library research are a regular part of the courses I teach (a) Every, (b) Most, (c) Some, (d) Few, (e) None, or (f) N/A

Faculty Responses	<i>f</i>	<i>p</i>
Every	6	40.0
Most	2	13.3
Some	2	13.3
Few	3	20.0
None	1	6.7
N/A	1	6.7
Total	15	100.0

Note. n= 15.

Faculty responses to Statement 4: I have included library instruction in my Graduate courses in the past and found it: (a) Improved, (b) Made No Difference In, (c) Confused My Students' Understanding of the Research Process, or (d) N/A, which gathered data regarding whether information literacy instruction had been provided to students in their courses in the past and the perceived impact the instruction had on the research skills of the students. The responses to Statement 4 revealed that 5 (33.3%) respondents indicated that the instruction had improved the research skills of their students; 5 (33.3%) indicated that the instruction made no difference; and, 5 (33.3%)

indicated an N/A response to the statement. The summary of responses to Statement 4 is presented in Table 45.

Table 45

Faculty Perception Survey Frequency of Response to Statement 4: I Have Included Library Instruction in My Courses in the Past and Found that it: (a) Improved, (b) Made No Difference, (c) Confused My Students' Understanding of the Research Process, or (d) N/A

Faculty Responses	<i>f</i>	<i>p</i>
Improved	5	33.3
Made no difference	5	33.3
N/A	5	33.3
Total	15	100.0

Note. n= 15.

The survey included a synopsis of the information literacy standards that were published by the Association of College and Research Libraries (2000) in order to provide faculty with a foundation by which to understand the characteristics of an information-literate person, as well as a basis for the faculty to provide a response to Statement 6: Given these standards, I would say my students are information-literate, which gathered data regarding faculty perceptions of their students' information literacy competency. The responses to Statement 6 indicated that 6 (40%) respondents noted that Most of their students are information literate; 6 (40%) noted that Some of their students

are information literate; and, 3 (20%) noted that Few of their students are information literate. The summary of responses to Statement 6 is presented in Table 46.

Table 46

Faculty Perception Survey. Faculty Response to Statement 6: Given These Standards, I Would Say My Students are Information-literate

Faculty Response	<i>f</i>	<i>p</i>
Most	6	40.0
Some	6	40.0
Few	3	20.0
Total	15	100.0

Note. n= 15.

Faculty responses to Statement 7: I would categorize the research skills of my students as: (a) Excellent, (b) Strong, (c) Adequate, (d) Poor, (e) N/A, or (f) Cannot Judge, which collected data regarding faculty perceptions of their students' research skills. The responses to Statement 7 revealed that 2 (13.3%) respondents perceive their students to have Strong research skills; 8 (53.3%) perceive their students to have Adequate research skills; 4 (26.7%) perceive their students to have Poor research skills; and, 1 (6.7%) selected the Cannot Judge for the statement. The summary of responses to Statement 7 is presented in Table 47. These findings are consistent with Dreifus (1981) and Hoffman et al. (2008), indicating that graduate faculty often perceive their students to possess greater research skills than those skills that the students may actually possess.

Table 47

Faculty Perception Survey Frequency of Response to Statement 7: I

Would Categorize the Research Skills of My Students as: (a)

Excellent, (b) Strong, (c) Adequate, (d) Poor, (e) N/A, or (d)

Cannot Judge

Faculty Response	<i>f</i>	<i>p</i>
Strong	2	13.3
Adequate	8	53.3
Poor	4	26.7
Cannot Judge	1	6.7
Total	15	100.0

Note. n= 15.

Finally, the faculty responded to a series of statements that highlighted specific information literacy competencies and research skills. Faculty responses to Statement 14: My students have an understanding of how information is produced, organized, and disseminated: (a) All, (b) Most, (c) Some, (c) Few, (d) None, (e) N/A, or (f) Cannot Judge, which gathered data regarding faculty perceptions of their students' competency of the information literacy standard addressing the production, organization and dissemination of information. The responses to Statement 14 revealed that 9 (60%) of respondents perceive that Most of their students fulfill this competency; 5 (33.3%) believe that Some of their students fulfill this competency; and, 1 (6.7%) selected the

Cannot Judge option for the statement. The summary of responses to Statement 14 is presented in Table 48.

Table 48

Faculty Perception Survey Frequency of Response to Statement 14: My Students Have an Understanding of How Information is Produced, Organized, and Disseminated: (a) All, (b) Most, (c) Some, (d) Few, (e) None, (f) N/A, or (g) Cannot Judge

Information Produced	<i>f</i>	<i>p</i>
Most	9	60.0
Some	5	33.3
Cannot Judge	1	6.7
Total	15	100.0

Note. n= 15.

Faculty responses to Statement 15: My students have an understanding of how information is organized into disciplines and subject fields: (a) All, (b) Most, (c) Some, (d) Few, (e) None, (f) N/A, or (g) Cannot Judge, which gathered data regarding the faculty perceptions of their students' competency of the information literacy standard addressing the organization of information by discipline or subject area. The responses to Statement 15 revealed that 9 (60%) respondents perceive that Most of their students fulfill this competency; 5 (33.3%) perceive that Some of their students fulfill this competency; and, 1 (6.7%) selected the Cannot Judge option for the statement. The summary of responses to Statement 15 is presented in Table 49.

Table 49

Faculty Perception Survey Frequency of Response to Statement 15:

My students have an understanding of how information is organized into disciplines and subject fields: (a) All, (b) Most, (c) Some, (c) Few, (d) None, (e) N/A, or (f) Cannot Judge

Organized into Subjects	<i>f</i>	<i>p</i>
Most	9	60.0
Some	5	33.3
Cannot Judge	1	6.7
Total	15	100.0

Note. n= 15.

Faculty responses to Statement 18: My students understand that research is a strategic process and approach it as such: (a) All, (b) Most, (c) Some, (c) Few, (d) None, (e) N/A, or (f) Cannot Judge, which gathered data regarding faculty perceptions of their student’s competency of the information literacy standard addressing the strategic nature of the research process. The responses to Statement 18 revealed that 2 (13.3%) respondents perceive that All of their students fulfill this competency; 6 (40%) perceive that Most of their students fulfill this competency; 5 (33.3%) perceive that Some of their students fulfill this competency; 1 (6.7%) perceive that Few of their students fulfill this competency; and, 1 (6.7%) selected the Cannot Judge option. The summary of responses to Statement 18 is presented in Table 50.

Table 50

Faculty Perception Survey Frequency of Response to Statement

18: My Students Understand that Research is a Strategic Process

and Approach it as Such: (a) All, (b) Most, (c) Some, (c) Few, (d)

None, (e) N/A, or (f) Cannot Judge

Strategic Process	<i>f</i>	<i>p</i>
All	2	13.3
Most	6	40.0
Some	5	33.3
Few	1	6.7
Cannot Judge	1	6.7
Total	15	100.0

Note. n= 15.

Faculty responses to Statement 19: My students know that research methodologies vary and apply the appropriate method as necessary: (a) All, (b) Most, (c) Some, (c) Few, (d) None, (e) N/A, or (f) Cannot Judge, which gathered data regarding the faculty perceptions of their students competency of the information literacy standard addressing the understanding and application of the appropriate research methodology according to their topic and discipline. The responses to Statement 19 revealed that 2 (13.3%) respondents perceive that Most of their students fulfill this competency; 9 (60%) perceive that Some of their students fulfill this competency; 2 (13.3%) perceive that Few

of their students fulfill this competency; and, 1 (6.7%) selected the Cannot Judge option for the statement. The summary of responses to Statement 19 is presented in Table 51.

Table 51

Faculty Perception Survey Frequency of Response to Statement

19: My Students Know that Research Methodologies Vary and

Apply the Appropriate Method as Necessary: (a) All, (b) Most, (c)

Some, (d) Few, (e) None, (f) N/A, or (g) Cannot Judge

Research Methodologies	<i>f</i>	<i>p</i>
Most	2	13.3
Some	9	60.0
Few	3	20.0
Cannot Judge	1	6.7
Total	15	100.0

Note. n= 15.

Faculty responses to Statement 20: My students know where to find data and information in traditional print reference resources: (a) All, (b) Most, (c) Some, (d) Few, (e) None, (f) N/A, or (g) Cannot Judge, which gathered data regarding the faculty perceptions of their students' research competency of being able to locate and use data found in traditional print resources. The responses to Statement 20 revealed that 1 (6.7%) respondents perceive that All of their students fulfill this competency; 5 (33.3%) perceive that Most of their students fulfill this competency; 6 (40%) perceive that Some of their students fulfill this competency; 2 (13.3%) perceive that Few of their students fulfill this

competency; and, 1 (6.7%) selected the Cannot Judge option. The summary of responses to Statement 20 is presented in Table 52.

Table 52

Faculty Perception Survey Frequency of Response to Statement 20: My Students Know Where to Find Data and Information in Traditional Print Reference Resources: (a) All, (b) Most, (c) Some, (c) Few, (d) None, (e) N/A, or (f) Cannot Judge

Print Reference Sources	<i>f</i>	<i>p</i>
All	1	6.7
Most	5	33.3
Some	6	40.0
Few	2	13.3
Cannot Judge	1	6.7
Total	15	100.0

Note. n= 15.

Faculty responses to Statement 21: My students know how to find data and information in electronic databases and on the World Wide Web: (a) All, (b) Most, (c) Some, (c) Few, (d) None, (e) N/A, or (f) Cannot Judge, which gathered data regarding the faculty perceptions of their students' research competency of knowing where and how to retrieve information from electronic databases and the World Wide Web. The responses to Statement 21 revealed that 2 (13.3%) respondents perceive that All of their students fulfill this competency; 7 (46.7%) perceive that Most of their students fulfill this

competency; 4 (26.7%) perceive that Some of their students fulfill this competency; 1 (6.7%) perceive that *Few* of their students fulfill this competency; and, 1 (6.7%) selected the Cannot Judge option. The summary of responses to Statement 21 is presented in Table 53.

Table 53

Faculty Perception Survey Frequency of Response to Statement 21: My Students Know How to Find Data and Information in Electronic Databases and on the World Wide Web: (a) All, (b) Most, (c) Some, (c) Few, (d) None, (e) N/A, or (f) Cannot Judge

Electronic Resources	<i>f</i>	<i>p</i>
All	2	13.3
Most	7	46.7
Some	4	26.7
Few	1	6.7
Cannot Judge	1	6.7
Total	15	100.0

Note. n= 15.

Faculty responses to Statement 22: My students are able to apply evaluative criteria to, and select quality information from the World Wide Web: (a) All, (b) Most, (c) Some, (c) Few, (d) None, (e) N/A, or (f) Cannot Judge, which gathered data regarding the faculty perceptions of their students' competency of the information literacy standard of critically evaluating information taken from the World Wide Web. The responses to

Statement 22 revealed that 1 (6.7%) respondents perceive that All of their students fulfill this competency; 4 (26.7%) perceive that Most of their students fulfill this competency; 8 (53.3%) perceive that Some of their students fulfill this competency; 1 (6.7%) perceive that Few of their students fulfill this competency; and, 1 (6.7%) selected the Cannot Judge option. The summary of responses to Statement 22 is presented in Table 54.

Table 54

Faculty Perception Survey Frequency of Response to Statement 22: My Students are Able to Apply Evaluative Criteria to, and Select Quality Information From, the World Wide Web: (a) All, (b) Most, (c) Some, (c) Few, (d) None, (e) N/A, or (f) Cannot Judge

Evaluate and Select	<i>f</i>	<i>P</i>
All	1	6.7
Most	4	26.7
Some	8	53.3
Few	1	6.7
Cannot Judge	1	6.7
Total	15	100.0

Note. n= 15.

Faculty responses to Statement 23: My students can discriminate between scholarly and non-scholarly information sources: (a) All, (b) Most, (c) Some, (c) Few, (d) None, (e) N/A, or (f) Cannot Judge, which gathered data regarding the faculty

perceptions of their students' competency of the information literacy standard addressing the discernment between scholarly and nonscholarly information sources. The responses to Statement 23 revealed that 5 (33.3%) respondents perceive that Most of their students fulfill this competency; 5 (33.3%) perceive that Some of their students fulfill this competency; 4 (26.7%) perceive that Few of their students fulfill this competency; and, 1 (6.7%) selected the Cannot Judge option for the statement. The summary of responses to Statement 23 is presented in Table 55.

Table 55

Faculty Perception Survey Frequency of Response to Statement 23: My Students Can Discriminate Between Scholarly and Nonscholarly Information Sources: (a) All, (b) Most, (c) Some, (c) Few, (d) None, (e) N/A, or (f) Cannot Judge

Scholarly vs. Nonscholarly	<i>f</i>	<i>P</i>
Most	5	33.3
Some	5	33.3
Few	4	26.7
Cannot Judge	1	6.7
Total	15	100.0

Note. n = 15.

An analysis of variance (ANOVA) could not be used to test for differences between these groups because the sample size was too small.

The results relating to the faculty perception of the levels of information literacy and research skills possessed by their students were statistically significant. Therefore, regarding Research Question Three and its corresponding hypothesis:

What is the attitude of faculty toward the place of information literacy in graduate programs of study?

H₃: Faculty perceive graduate students to possess the information literacy and research skills necessary to succeed in the program.

The hypothesis was proven.

Further, the results pertaining to the inclusion of information literacy instruction in graduate courses were not statistically significant. Therefore, regarding Research Question Four and its corresponding hypothesis:

What relationship does faculty attitude have on whether information literacy instruction is provided?

H₄: Faculty perceive that information literacy instruction is applicable at the graduate level.

The hypothesis was not proven.

Conclusions

This study revealed that the graduate students at University Y perceive that they possess information literacy competency, and have little to no library anxiety. This conclusion is based on a series of data analyses.

The first discussion will concern Research Question One and its corresponding hypothesis:

What is the relationship of library anxiety on general information literacy competencies?

H₁: Library anxiety will have an impact on the general information literacy competencies of graduate students.

First, the *Information Literacy Inventory* posttest results, particularly for Statement 5: Useful ways to evaluate the reliability or authority of a source are to note: (a) author, (b) publisher, (c) date of publication, or (d) none of the above; Statement 6: Information posted on the Internet is available for fair use and is not covered by copyright restrictions: (a) true, (b) false; Statement 7: As long as I paraphrase the ideas and words of an author, I do not have to cite the author and his work in my paper: (a) true, (b) false; and Statement 8: Only print materials used in my research need to be cited in a note or bibliography: (a) true, (b) false indicated that students were comfortable with evaluating and using information, which relates to Information Literacy Standard 3: The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system (see Appendix D). While there was not a statistically significant shift in responses between the pre- and posttest, the results of the posttest indicated that information literacy instruction did provide students with a certain level of research skill they did not possess before (Cooney & Hiris, 2003).

Second, the *Library Anxiety Scale* posttest results revealed that the respondents provided an overall response of disagree to Statement 9: I am unsure about how to begin my research ($M = 2.17$, $SD = 1.134$) (see Table 36, Appendix E), indicating that the students are confident in knowing where and how to begin the research process. This

finding is further substantiated through Onwuegbuzie (1997), who indicated that students with lower anxiety levels are better equipped to navigate the research proposal process.

Third, the *Library Anxiety Scale* posttest results revealed that the respondents provided an overall response of disagree to Statement 24: I can never find things in the library ($M = 2.23$, $SD = .865$) (see Table 36, Appendix E), indicating that the students are able to locate the things, or resources, they need in the library. Students who are able to navigate their way through the library are less likely to experience library anxiety (Kuhlthau, 1988; Onwuegbuzie, 1997).

Fourth, the *Library Anxiety Scale* posttest results revealed that the respondents provided an overall response of disagree to Statement 38: I don't know what resources are available in the Library ($M = 2.42$, $SD = 1.117$) (see Table 36 in Appendix E), which indicates that students are familiar with and knowledgeable about the resources available to them through the library. Students who know the resources available to them in and through the library are less likely to experience library anxiety because the frustration over not knowing where to look for the information is not as prevalent as it may be in someone who may not know what resources are available. The frustration and anxiety resulting from not knowing what resources are available often results in students giving up during the exploration phase of the research process (Kuhlthau, 1988).

Finally, the *Library Anxiety Scale* posttest results revealed that the respondents provided an overall response of disagree to Statement 4: The librarians are unhelpful ($M = 2.21$, $SD = 1.145$); Statement 8: The reference librarians don't have time to help me because they're always busy doing something else ($M = 2.07$, $SD = .031$); Statement 17: I feel like I'm bothering the reference librarian if I ask a question ($M = 2.18$, $SD = 1.046$);

and, Statement 20: The reference librarians are unfriendly ($M = 2.03, SD = 1.042$) (see Table 36 in Appendix E), indicating that the students' overall interaction with the librarians is positive. The positive interaction with the librarians and library staff serves to diminish the intensity of library anxiety because students know whom they can approach with a research question. Further, the *Library Anxiety Scale* posttest results revealed that the respondents provided an overall response of strongly disagree to Statement 12: The reference librarians are not approachable ($M = 1.86, SD = .931$) and Statement 33: Librarians don't have time to help me ($M = 1.97, SD = .792$) (see Table 36 in Appendix E), providing further substantiation that the students in this sample do not experience barriers with staff (Bostick, 1992).

The second discussion will concern Research Question Two and its corresponding hypothesis:

What relationship does library anxiety have on graduate students taking advantage of information literacy instruction opportunities?

H₂: Information literacy instruction sessions will alleviate the intensity of library anxiety experienced by graduate students.

The data did not provide statistically significant results about this question. One factor to consider may be that the sample size was not large enough to get an accurate picture of the information literacy competency and library anxiety intensity of graduate students. Additionally, data was not collected on the actual information-seeking behavior of students, i.e., how students go about the process of locating the information they need. A student who may not know how to navigate the electronic library effectively may be more likely to experience library anxiety as the information gets lost in the data fields, so

feelings of frustration and being overwhelmed become factors in the research process, which often leads to library anxiety. Finally, while students indicated topics on which they would like further instruction on both the *Information Literacy Inventory* pre- and posttest, many students do not want to take the time to participate in workshops or web-based tutorials to get the instruction they need. Therefore, there continues to be a need to establish both formal and informal instruction sessions through which graduate students are able to learn and master the skills necessary to be an information-literate person, as well as to complete the required research that is part of their respective program (Hoffman et al., 2008; Lei, 2008; Lindsay et al., 2006; Rempel & Davidson, 2008; Washington-Hoagland & Clougherty, 2002).

The third discussion will concern Research Question Three and its corresponding hypothesis:

What is the attitude of faculty toward the place of information literacy in graduate programs of study?

H₃: Faculty perceive graduate students to possess the information literacy and research skills necessary to succeed in the program.

This study revealed that graduate faculty provided mixed opinions regarding the usefulness of information literacy instruction at the graduate level. Table 45 illustrates that respondents were evenly divided on the responses of Improved and Made No Difference In to Statement 4: I have included library instruction in my graduate courses in the past and found that it on the *Faculty Perception Survey*. One factor to consider for this result may be the faculty's perception of the overall information literacy competency and research skill level of graduate students. The results of the *Faculty Perception Survey*

indicate that faculty perceived their students to be both information literate and in possession of the research skills that are necessary to be successful in their program (Dreifuss, 1981; Gonzales, 2001; Hoffman et al., 2008; Singh, 2005; Unrau & Beck, 2004). Faculty may perceive students' skills to be greater than what is actually the case. This perception of student competency and skill level may be a contributing factor for why graduate faculty do not include information literacy instruction as part of their courses.

The fourth discussion will concern Research Question Four and its corresponding hypothesis:

What relationship does faculty attitude have on whether information literacy instruction is provided?

H₄: Faculty perceive that information literacy instruction is applicable at the graduate level.

This study revealed that faculty may not perceive information literacy instruction to be applicable at the graduate level as they perceive their students to be information literate and in possession of the research skills necessary to succeed in the graduate program. Additionally, faculty may not provide, or include, information literacy instruction as part of their courses because they do not understand the role of the librarian and purpose of the instruction (Maynard, 1990; Veach, 2009). Finally, the faculty may be reluctant to incorporate information literacy instruction as part of their courses because they are concerned that they will not have enough time to cover the subject matter of the course (Morrison, 2007).

Implications and Recommendations

Information literacy is a topic that continues to receive much attention within academic librarianship, but it is also a topic of growing interest within higher education and the professional environment. The literature discussed both the philosophy and application of information literacy instruction in broad terms as the instruction serves to provide a foundation on which students are equipped with the skills they need to be effective lifelong learners, informed citizens, and successful workers. Graduate faculty at University Y, as well as the academic librarians and graduate faculty at other institutions of higher education, have expressed interest in the outcome, long-term implications, and applications of this study. Further, the graduate faculty and program directors at University Y were instrumental in the investigation of this topic because the application of the findings could prove beneficial for both the faculty and students in the programs included in the study, as well as for the university as a whole.

This study informs both academic librarians and graduate faculty about where a group of graduate students were on the spectrum of information literacy competencies and library anxiety. The study also serves to provide a basis from which academic librarians and graduate faculty can dialogue about the continued need for information literacy instruction, the details of what should be included in the instruction, and the avenues through which this instruction may best be instituted. Further, the study demonstrated the potential and need for further investigation into the factors affecting the 21st century graduate student in relation to library anxiety and the effect that library anxiety has on the acquisition and development of information literacy competence. The

results of this study can continue to provide an understanding of how students use and view the resources and services offered through university (academic) libraries.

One of the recommendations that came into view during the course of this study was the need to update some of the instruments used during this study. The instruments need to reflect the changing nature of academic libraries and the services they provide to their constituencies. One of the results of the study indicated that many students selected the undecided option when asked to respond to statements describing their use of the physical library building. This result may imply that use of the physical library may not be as practical or relevant for the graduate student as it was in the past. Therefore, one variable to include on either the *Information Literacy Inventory* or *Library Anxiety Scale* would be how electronic, i.e., digital information access and use impacts both the information-seeking behavior and information literacy competence of graduate students. Further, an instrument needs to be created to collect data about the information-seeking behavior of students and the use of information by students, who now live in an ever-growing electronic environment. Finally, the *Information Literacy Inventory* should be an objective, observer-scored assessment rather than a subjective self-assessment of to provide greater insight as to actual levels of information literacy competency.

A second recommendation that came to light during the course of the study is the need to collect demographic data related to gender, nature of student contact with course and faculty, e.g., face-to-face or online, and the number of years since the last earned degree(s). The *Faculty Perception Survey* should also include such demographic data as, number of years teaching at the university, or number of graduate courses taught, which could provide a broader understanding of the response context. The additional

demographic data will assist the future researcher in developing a stronger understanding of the dynamics of library anxiety and information literacy competency as they relate to graduate students. Additionally, the demographic data would serve to inform academic librarians where their energies could be focused regarding research instruction and support. Many institutions have graduate students spread out across the country and around the world who may never, or rarely, step foot on the physical campus of the university or use the university's physical library facilities. The additional demographic data would provide an understanding of research support services needed most by remote students.

A third recommendation would be to conduct a study at another private institution of higher education and a public institution of higher education in order to evaluate graduate students regarding the intensity of their library anxiety and levels of information literacy competency.

A fourth recommendation would be for the graduate librarian and Research Methods I professor at Olivet Nazarene University to administer the *Information Literacy Inventory* and *Library Anxiety Scale* to doctoral learners at the beginning of the coursework for the Doctor of Education in Ethical Leadership program, in order to determine where the students are on the spectrum of information literacy competency and intensity of library anxiety so that the librarian may provide the appropriate level of instruction support to the students' needs.

A final recommendation would call for the use of qualitative research methods in addition to the quantitative methods used in this study. By using interviews and focus groups, for example, the researcher would then have the opportunity to gain greater

understanding of the context of the quantitative responses that were provided by both students and faculty. By employing both qualitative and quantitative methods, the study would be more robust in understanding library anxiety in graduate students and the impact it has on the students' information literacy competency. The qualitative venue would further provide opportunity for the student to be more involved in the research behind the development and implementation of an instructional program suited to meet the needs of graduate students, both on campus and remotely. In creating this study, the researcher could work alongside faculty to develop and implement a research instruction program that would provide graduate students with the skills to become better students and lifelong learners.

The research findings of this study indicated that while graduate faculty perceived their students to be information literate and in possession of the research skills necessary to perform the required research in the program successfully, and the graduate students perceived themselves as possessing information literacy competency absent of library anxiety, there continued to be some application and relevance of information literacy instruction at the graduate level. The graduate faculty and university librarians should work collaboratively to provide opportunities for students to learn how to become skilled researchers, as well as effective and ethical managers and users of information. By doing so, students can become more successful learners in the classroom and beyond.

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Appendix A

Information Literacy Inventory

Information Literacy Inventory

1. I have used the university's library _____ times for my research assignments.
2. When I have a research assignment, I use the following to find what I need: (circle as many as apply)
 - a. The Internet
 - b. Library print resources in the university library
 - c. Library print resources from other libraries
 - d. Library databases through the university's library
 - e. Library databases through my local library
 - f. Library faculty and staff
 - g. Resources from department faculty
 - h. Other (please specify): _____
3. If you used the university library's databases for your research assignments, do you access them: (circle as many as apply)
 - a. Inside the library building
 - b. On campus
 - c. From home
 - d. I have not as yet used library databases
4. I am more likely to find authoritative information on a research topic at which of the following Internet sites: (circle as many as apply)
 - a. .com
 - b. .gov
 - c. .org
 - d. .edu
5. Useful ways to evaluate the reliability or authority of a source are to note: (circle as many as apply)
 - a. Author
 - b. Publisher
 - c. Date of Publication
 - d. None of the Above
6. Information posted on the Internet is available for fair use and is not covered by copyright restrictions.
True _____ False _____

7. As long as I paraphrase the ideas and words of an author, I do not have to cite the author and his work in my research paper.

True _____

False _____

8. Only print materials used in my research need to be cited in a note or bibliography.

True _____

False _____

9. I have used the Turabian style manual.

Yes _____

No _____

10. I have used the APA style manual.

Yes _____

No _____

11. How would you rate your comfort level in conducting the research required in this program?

Very Uncomfortable	Not Comfortable	Not Sure	Comfortable	Very Comfortable
1	2	3	4	5

12. What information skills do you need the most help with? (Circle all that apply)

a. Locating print materials

b. Using library databases

c. Finding on-target Web sites

d. Other (please specify): _____

Appendix B

Library Anxiety Scale

SHARON L. BOSTICK, PH.D.
DEAN OF LIBRARIES
UNIVERSITY OF MISSOURI-KANSAS CITY
KANSAS CITY, MO 64110

January 26, 2010

Rodney Birch

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Dear Mr. Birch,

Thank you for your interest in the Library Anxiety Scale. You have my permission to use it for your research. I would appreciate a copy of the results when your research is completed. I am very interested in your project and am eager to hear about your progress. Please note that any changes to the instrument must be cleared by me, as it is copyrighted and statistically validated.

If you have any questions or you wish to discuss administering the instrument, please feel free to contact me. I can be reached via email at bosticks@umkc.edu.

Good luck!

Sincerely,

Sharon L. Bostick, Ph.D.

Library Anxiety Scale

Sharon L. Bostick, Ph.D
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A=Strongly Disagree B=Disagree C=Undecided D=Agree E=Strongly Agree

I'm embarrassed that I don't know how to use the library.
A lot of the university is confusing to me.
The librarians are unapproachable.
The reference librarians are unhelpful.
The librarians don't have time to help me because they're always on the telephone.
I can't get help in the library at the times I need it.
Library clerks don't have time to help me.
The reference librarians don't have time to help me because they're always busy doing something else.
I am unsure about how to begin my research.
I get confused trying to find my way around the library.
I don't know what to do next when the book I need is not on the shelf.
The reference librarians are not approachable.
I enjoy learning new things about the library.
If I can't find a book on the shelf the library staff will help me.
There is often one available in the library to help me.
I feel comfortable using the library.
I feel like I'm bothering the reference librarian if I ask a question.
I feel safe in the library.
I feel comfortable in the library.
The reference librarians are unfriendly.
I can always ask a librarian if I don't know how to work a piece of equipment in the library.
The library is a comfortable place to study.
The library never has the materials I need.
I can never find things in the library.
There is too much crime in the library.
The people who work at the circulation desk are helpful.
The library staff doesn't care about students.
The library is an important part of my school.
I want to learn to do my own research.
The copy machines are usually out of order.
I don't understand the library's overdue fines.
Good instructions for using the library's computers are available.
Librarians don't have time to help me.
The library's rules are too restrictive.
I don't feel physically safe in the library.
The computer printers are often out of paper.
The directions for using the computers are not clear.

A=Strongly Disagree B=Disagree C=Undecided D=Agree E=Strongly Agree

I don't know what resources are available in the library.

The library staff doesn't listen to students.

The change machines are usually out of order.

The library is a safe place.

The library won't let me check out as many items as I need.

I can't find space in the library to study.

Appendix C

Faculty Perception Survey

Faculty Perception Survey

1. Assignments requiring library research are a regular part of the courses I teach.

Every	Most	Some	Few	None	N/A
-------	------	------	-----	------	-----

2. Library instruction is a regular part of the courses I teach.

Every	Most	Some	Few	None	N/A
-------	------	------	-----	------	-----

3. I have included library instruction in my undergraduate courses in the past and found it

Improved	Made No Difference In	Confused My Students' Understanding of the Research Process	N/A
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4. I have included library instruction in my graduate courses in the past and found it

Improved	Made No Difference In	Confused My Students' Understanding of the Research Process	N/A
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5. Our college/school/division/department has a library liaison who acts as a subject specialist in support of our program/courses.

Agree	Disagree	Do Not Know
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Please read this statement and these standards for information literacy established by the Association of College and Research Libraries (ACRL) and respond to questions #6, 7, & 8.

Information literacy forms the basis for lifelong learning. It is common to all disciplines, to all learning environments, and to all levels of education. It enables learners to master content and extend their investigations, become more self-directed, and assume greater control over their own learning. 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 (ACRL, (2000). Information Literacy Competency Standards for Higher Education. Chicago: ACRL).

6. Given these standards, I would say my students are information literate.

All	Most	Some	Few	None	N/A	Cannot Judge
-----	------	------	-----	------	-----	--------------

7. I would categorize the research skills of my students as:

Excellent	Strong	Adequate	Poor	N/A	Cannot Judge
-----------	--------	----------	------	-----	--------------

8. My students are able to communicate visually: interpret visual media and create meaningful visuals.
 Excellent Strong Adequate Poor N/A Cannot Judge
9. My students are able to conceptualize and formulate good questions.
 Excellent Strong Adequate Poor N/A Cannot Judge
10. My students display solid time management skills by readily meeting course requirements within deadlines.
 All Most Some Few None N/A Cannot Judge
11. My students display sound critical thinking skills.
 All Most Some Few None N/A Cannot Judge
12. My students apply analysis and original thought to existing information to create new information.
 All Most Some Few None N/A Cannot Judge
13. My students are comfortable using computers for information gathering and data manipulation.
 All Most Some Few None N/A Cannot Judge
14. My students have an understanding of how information is produced, organized, and disseminated.
 All Most Some Few None N/A Cannot Judge
15. My students have an understanding of how information is organized into disciplines and subject fields.
 All Most Some Few None N/A Cannot Judge
16. My students understand how professionals working in their area of study use information.
 All Most Some Few None N/A Cannot Judge
17. My students confer with faculty to identify information resources and processes used in the field.
 All Most Some Few None N/A Cannot Judge
18. My students understand that research is a strategic process and approach it as such.
 All Most Some Few None N/A Cannot Judge
19. My students know that research methodologies vary and apply the appropriate method as necessary.
 All Most Some Few None N/A Cannot Judge

20. My students know where to find data and information in traditional print reference resources.
 All Most Some Few None N/A Cannot Judge
21. My students know how to find data and information in electronic databases and on the World Wide Web.
 All Most Some Few None N/A Cannot Judge
22. My students are able to apply evaluative criteria to, and select quality information from, the World Wide Web.
 All Most Some Few None N/A Cannot Judge
23. My students can discriminate between scholarly and non-scholarly information sources.
 All Most Some Few None N/A Cannot Judge
24. My students consistently cite materials using the appropriate citation style.
 All Most Some Few None N/A Cannot Judge
25. My students understand cultural, historical, literary, musical, philosophical, political, and social allusions and references that would be considered common knowledge to individuals on their educational level.
 All Most Some Few None
26. My students are actively, intellectually engaged in class and their participation drives the discourse.
 All Most Some Few None

27. Please list some information seeking skills a graduate student should have.

*Adapted with permission.

Appendix D

Information Literacy Standards, Performance Indicators, and Outcomes

Taken from:

Association of College and Research Libraries (ACRL). (2000). *Information literacy competency standards for higher education*. Chicago: American Library Association.

Standard One: The information literate student determines the nature and extent of the information needed.

Performance Indicators:

1. The information literate student defines and articulates the need for information.

Outcomes include:

- a. Confers with instructors and participates in class discussions, peer workgroups, and electronic discussions to identify a research topic, or other information need
 - b. Develops a thesis statement and formulates questions based on the information need
 - c. Explores general information sources to increase familiarity with the topic
 - d. Defines or modifies the information need to achieve a manageable focus
 - e. Identifies key concepts and terms that describe the information need
 - f. Recognizes that existing information can be combined with original thought, experimentation, and/or analysis to produce new information
2. The information literate student identifies a variety of types and formats of potential sources for information.

Outcomes include:

- a. Knows how information is formally and informally produced, organized, and disseminated
 - b. Recognizes that knowledge can be organized into disciplines that influence the way information is accessed
 - c. Identifies the value and differences of potential resources in a variety of formats (e.g., multimedia, database, website, data set, audio/visual, book)
 - d. Identifies the purpose and audience of potential sources (e.g., popular vs. scholarly, current vs. historical)
 - e. Differentiates between primary and secondary sources, recognizing how their use and importance vary with each discipline
 - f. Realizes that information may need to be constructed with raw data from primary sources
3. The information literate student considers the costs and benefits of acquiring the needed information.

Outcomes include:

- a. Determines the availability of needed information and makes decisions on broadening the information seeking process beyond local resources (e.g., interlibrary loan; using resources at other locations; obtaining images, videos, text, or sound)
- b. Considers the feasibility of acquiring a new language or skill (e.g., foreign or discipline-based) in order to gather needed information and to understand its context

- c. Defines a realistic overall plan and timeline to acquire the needed information
4. The information literate student reevaluates the nature and extent of the information need.

Outcomes include:

- a. Reviews the initial information need to clarify, revise, or refine the question
- b. Describes criteria used to make information decisions and choices

Standard Two: The information literate student accesses needed information effectively and efficiently.

Performance Indicators:

1. The information literate student selects the most appropriate investigative methods or information retrieval systems for accessing the needed information.

Outcomes include:

- a. Identifies appropriate investigative methods (e.g., laboratory experiment, simulation, fieldwork)
- b. Investigates benefits and applicability of various investigative methods
- c. Investigates the scope, content, and organization of information retrieval systems
- d. Selects efficient and effective approaches for accessing the information needed from the investigative method or information retrieval system
2. The information literate student constructs and implements effectively-designed search strategies.

Outcomes include:

- a. Develops a research plan appropriate to the investigative method
 - b. Identifies keywords, synonyms and related terms for the information needed
 - c. Selects controlled vocabulary specific to the discipline or information retrieval source
 - d. Constructs a search strategy using appropriate commands for the information retrieval system selected (e.g., Boolean operators, truncation, and proximity for search engines; internal organizers such as indexes for books)
 - e. Implements the search strategy in various information retrieval systems using different user interfaces and search engines, with different command languages, protocols, and search parameters
 - f. Implements the search using investigative protocols appropriate to the discipline
3. The information literate student retrieves information online or in person using a variety of methods.

Outcomes include:

- a. Uses various search systems to retrieve information in a variety of formats
- b. Uses various classification schemes and other systems (e.g., call number systems or indexes) to locate information resources within the library or to identify specific sites for physical exploration
- c. Uses specialized online or in person services available at the institution to retrieve information needed (e.g., interlibrary loan/document delivery,

professional associations, institutional research offices, community resources, experts and practitioners)

d. Uses surveys, letters, interviews, and other forms of inquiry to retrieve primary information

4. The information literate student refines the search strategy if necessary.

Outcomes include:

a. Assesses the quantity, quality, and relevance of the search results to determine whether alternative information retrieval systems or investigative methods should be utilized

b. Identifies gaps in the information retrieved and determines if the search strategy should be revised

c. Repeats the search using the revised strategy as necessary

5. The information literate student extracts, records, and manages the information and its sources.

Outcomes include:

a. Selects among various technologies the most appropriate one for the task of extracting the needed information (e.g., copy/paste software functions, photocopier, scanner, audio/visual equipment, or exploratory instruments)

b. Creates a system for organizing the information

c. Differentiates between the types of sources cited and understands the elements and correct syntax of a citation for a wide range of resources

d. Records all pertinent citation information for future reference

e. Uses various technologies to manage the information selected and organized

Standard Three: The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.

Performance Indicators:

1. The information literate student summarizes the main ideas to be extracted from the information gathered.

Outcomes include:

- a. Reads the text and selects main ideas
 - b. Restates textual concepts in his/her own words and selects data accurately
 - c. Identifies verbatim material that can be then appropriately quoted
2. The information literate student articulates and applies initial criteria for evaluating both the information and its sources.

Outcomes include:

- a. Examines and compares information from various sources in order to evaluate reliability, validity, accuracy, authority, timeliness, and point of view or bias
 - b. Analyzes the structure and logic of supporting arguments or methods
 - c. Recognizes prejudice, deception, or manipulation
 - d. Recognizes the cultural, physical, or other context within which the information was created and understands the impact of context on interpreting the information
3. The information literate student synthesizes main ideas to construct new concepts.

Outcomes include:

- a. Recognizes interrelationships among concepts and combines them into potentially useful primary statements with supporting evidence
 - b. Extends initial synthesis, when possible, at a higher level of abstraction to construct new hypotheses that may require additional information
 - c. Utilizes computer and other technologies (e.g., spreadsheets, databases, multimedia, and audio or visual equipment) for studying the interaction of ideas and phenomena
4. The information literate student compares new knowledge with prior knowledge to determine the value added, contradictions, or other unique characteristics of the information.

Outcomes include:

- a. Determines whether information satisfies the research or other information need
- b. Uses consciously selected criteria to determine whether the information contradicts or verifies information used from other sources
- c. Draws conclusions based upon information gathered
- d. Tests theories with discipline-appropriate techniques (e.g., simulators, experiments)
- e. Determines probable accuracy by questioning the source of the data, the limitations of the information gathering tools or strategies, and the reasonableness of the conclusions
- f. Integrates new information with previous information or knowledge

- g. Selects information that provides evidence for the topic
- 5. The information literate student determines whether the new knowledge has an impact on the individual's value system and takes steps to reconcile differences.

Outcomes include:

- a. Investigates differing viewpoints encountered in the literature
- b. Determines whether to incorporate or reject viewpoints encountered
- 6. The information literate student validates understanding and interpretation of the information through discourse with other individuals, subject-area experts, and/or practitioners.

Outcomes include:

- a. Participates in classroom and other discussions
- b. Participates in class-sponsored electronic communication forums designed to encourage discourse on the topic (e.g., e-mail, bulletin boards, chat rooms)
- c. Seeks expert opinions through a variety of mechanisms (e.g., interviews, e-mail, listservs)
- 7. The information literate student determines whether the initial query should be revised.

Outcomes include:

- a. Determines if original information need has been satisfied or if additional information is needed
- b. Reviews search strategy and incorporates additional concepts as necessary
- c. Reviews information retrieval sources used and expands to include others as needed

Standard Four: The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose.

Performance Indicators:

1. The information literate student applies new and prior information to the planning and creation of a particular product or performance

Outcomes include:

- a. Organizes the content in a manner that supports the purposes and format of the product or performance (e.g., outlines, drafts, storyboards)
 - b. Articulates knowledge and skills transferred from prior experiences to planning and creating the product or performance
 - c. Integrates the new and prior information, including quotations and paraphrasing, in a manner that supports the purpose of the product or performance
 - d. Manipulates the digital text, images and data, as needed, transferring them from their original locations and formats to a new context
2. The information literate student revises the development process for the product or performance.

Outcomes include:

- a. Maintains a journal or log of activities related to the information seeking, evaluating, and communicating process
 - b. Reflects on past successes, failures, and alternative strategies
3. The information literate student communicates the product or performance effectively to others.

Outcomes include:

- a. Chooses a communication medium and format that best supports the purposes of the product or performance and the intended audience
- b. Uses a range of information technology applications in creating the product or performance
- c. Incorporates principles of design and communication
- d. Communicates clearly and with a style that supports the purposes of the intended audience

Standard Five: 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.

Performance Indicators:

1. The information literate student understands many of the ethical, legal and socio-economic issues surrounding information and information technology

Outcomes include:

- a. Identifies and discusses issues related to privacy and security in both the print and electronic environments
- b. Identifies and discusses issues related to free vs. fee-based access to information
- c. Identifies and discusses issues related to censorship and freedom of speech
- d. Demonstrates an understanding of intellectual property, copyright, and fair use of copyrighted material

2. The information literate student follows laws, regulations, institutional policies, and etiquette related to the access and use of information resources.

Outcomes include:

- a. Participates in electronic discussions following accepted practices (e.g., “Netiquette”)
 - b. Uses approved passwords and other forms of ID for access to information resources
 - c. Complies with institutional policies on access to information resources
 - d. Preserves the integrity of information resources, equipment, systems and facilities
 - e. Legally obtains, stores, and disseminates text, data, images, or sounds
 - f. Demonstrates an understanding of what constitutes plagiarism and does not represent work attributable to others as his/her own
 - g. Demonstrates an understanding of institutional policies related to human subjects research
3. The information literate student acknowledges the use of information sources in communicating the product or performance.

Outcomes include:

- a. Selects an appropriate documentation style and uses it consistently to cite sources
- b. Posts permission granted notices, as needed, for copyright material

Appendix E

Library Anxiety Scale Paired Samples *t* Test

Table 36

Library Anxiety Scale Pre- and posttest Paired Samples t Test

	Statement	<i>M</i>	<i>N</i>	<i>SD</i>	<i>SEM</i>
Pair 1	EMBARRASSED	2.14	71	1.175	.139
	EMBARRASSED	2.17	71	1.134	.135
Pair 2	UNIVERSITY	2.11	71	1.036	.123
	UNIVERSITY	2.17	71	1.121	.133
Pair 3	LIBRARIANS	1.77	71	.944	.112
	LIBRARIANS	1.93	71	.884	.105
Pair 4	UNHELPFUL	2.07	71	1.046	.124
	UNHELPFUL	2.21	71	1.145	.136
Pair 5	TELEPHONE	1.89	71	.964	.114
	TELEPHONE	1.90	71	.913	.108
Pair 6	NO HELP	1.97	71	1.000	.119
	NO HELP	2.17	71	.971	.115
Pair 7	LIBRARY CLERKS	1.79	71	.827	.098
	LIBRARY CLERKS	2.01	71	.886	.105
Pair 8	REFLIB NO HELP	1.90	71	.831	.099
	REFLIB NO HELP	2.07	71	.931	.110
Pair 9	UNSURE START	2.69	71	1.237	.147
	UNSURE START	2.51	71	1.206	.143
Pair 10	CONFUSED	2.45	71	1.106	.131
	CONFUSED	2.41	71	1.141	.135
Pair 11	NOT ON SHELF	2.41	71	1.103	.131
	NOT ON SHELF	2.13	71	1.055	.125

Pair 12	UNAPPROACHABLE	1.92	71	.770	.091
	UNAPPROACHABLE	1.86	71	.798	.095
Pair 13	LEARNING NEW THINGS	3.59	71	1.036	.123
	LEARNING NEW THINGS	3.59	71	1.090	.129
Pair 14	LIBRARY STAFF HELP	3.97	71	.941	.112
	LIBRARY STAFF HELP	3.90	71	.988	.117
Pair 15	COMFORTABLE USING LIBRARY	1.99	71	.837	.099
	COMFORTABLE USING LIBRARY	1.99	71	.802	.095
Pair 16	NO ONE AVAILABLE TO HELP	3.77	71	.929	.110
	NO ONE AVAILABLE TO HELP	3.77	71	1.058	.126
Pair 17	BOTHERING LIBRARIANS	2.07	71	.961	.114
	BOTHERING LIBRARIANS	2.18	71	1.046	.124
Pair 18	FEEL SAFE	4.15	71	.873	.104
	FEEL SAFE	4.15	71	.951	.113
Pair 19	FEEL COMFORTABLE	4.00	71	.941	.112
	FEEL COMFORTABLE	4.03	71	.878	.104
Pair 20	UNFRIENDLY	1.99	71	.933	.111
	UNFRIENDLY	2.03	71	1.042	.124
Pair 21	EQUIPMENT USE	4.15	71	.822	.098
	EQUIPMENT USE	3.97	71	.985	.117

Pair 22	COMFORTABLE PLACE TO STUDY	3.68	71	1.039	.123
	COMFORTABLE PLACE TO STUDY	3.76	71	.963	.114
Pair 23	NEVER HAS MATERIALS	2.07	71	.834	.099
	NEVER HAS MATERIALS	2.21	71	.909	.108
Pair 24	NEVER FIND THINGS	2.25	71	.857	.102
	NEVER FIND THINGS	2.23	71	.865	.103
Pair 25	CRIME	1.70	71	.800	.095
	CRIME	1.70	71	.916	.109
Pair 26	CIRCULATION DESK WORKERS HELPFUL	3.62	71	1.047	.124
	CIRCULATION DESK WORKERS HELPFUL	3.96	71	.783	.093
Pair 27	DON'T CARE ABOUT STUDENTS	1.76	71	.801	.095
	DON'T CARE ABOUT STUDENTS	1.72	71	.701	.083
Pair 28	IMPORTANT PART OF SCHOOL	4.45	71	3.679	.437
	IMPORTANT PART OF SCHOOL	4.20	71	.920	.109
Pair 29	LEARN TO DO OWN RESEARCH	3.79	71	1.081	.128
	LEARN TO DO OWN RESEARCH	3.87	71	1.133	.134

Pair 30	COPY MACHINES DON'T WORK	2.54	71	.753	.089
	COPY MACHINES DON'T WORK	2.58	71	.905	.107
Pair 31	OVERDUE FINES	2.35	71	1.016	.121
	OVERDUE FINES	2.61	71	1.089	.129
Pair 32	COMPUTER INSTRUCTIONS	3.23	71	.929	.110
	COMPUTER INSTRUCTIONS	3.35	71	.943	.112
Pair 33	LIBRARIANS NO TIME TO HELP	1.97	71	.878	.104
	LIBRARIANS NO TIME TO HELP	1.97	71	.792	.094
Pair 34	RULES TOO RESTRICTIVE	2.08	71	.788	.094
	RULES TOO RESTRICTIVE	2.11	71	.934	.111
Pair 35	PHYSICALLY SAFE	1.76	71	.819	.097
	PHYSICALLY SAFE	1.66	71	.955	.113
Pair 36	PRINTERS OUT OF PAPER	2.59	71	.950	.113
	PRINTERS OUT OF PAPER	2.52	71	.939	.111
Pair 37	COMPUTER USE DIRECTIONS UNCLEAR	2.49	71	.924	.110
	COMPUTER USE DIRECTIONS UNCLEAR	2.41	71	.950	.113

Pair 38	DON'T KNOW	2.46	71	1.053	.125
	RESOURCES				
	AVAILABLE				
	DON'T KNOW	2.42	71	1.117	.133
	RESOURCES				
	AVAILABLE				
Pair 39	STAFF DOESN'T LISTEN	1.85	71	.768	.091
	TO STUDENTS				
	STAFF DOESN'T LISTEN	1.92	71	.806	.096
	TO STUDENTS				
Pair 40	CHANGE MACHINE	2.70	71	.763	.091
	DOESN'T WORK				
	CHANGE MACHINE	2.59	71	.729	.086
	DOESN'T WORK				
Pair 41	SAFE PLACE	4.08	71	.937	.111
	SAFE PLACE	4.11	71	.949	.113
Pair 42	CHECK OUT	2.51	71	.954	.113
	CHECK OUT	2.69	71	.950	.113
Pair 43	NO PLACE TO STUDY	2.21	71	.893	.106
	NO PLACE TO STUDY	2.39	71	1.127	.134

Table 36

Library Anxiety Scale Pre- and Posttest Paired Samples t Test Paired Differences

		Paired Differences							Sig. (2-tailed)
		<i>M</i>	<i>SD</i>	<i>SEM</i>	95% Confidence Interval of the Difference		<i>t</i>	<i>df</i>	
					Lower	Upper			
Pair1	EMBARRASSED- EMBARRASSED	-.028	1.724	.205	-.436	.380	-.138	70	.891
Pair 2	UNIVERSITY - UNIVERSITY	-.056	1.557	.185	-.425	.312	-.305	70	.761
Pair 3	LIBRARIANS - LIBRARIANS	-.155	1.316	.156	-.467	.157	-.992	70	.325
Pair 4	UNHELPFUL - UNHELPFUL	-.141	1.588	.188	-.517	.235	-.747	70	.457
Pair 5	TELEPHONE - TELEPHONE	-.014	1.409	.167	-.348	.319	-.084	70	.933
Pair 6	NO HELP – NO HELP	-.197	1.390	.165	-.526	.132	-1.195	70	.236
Pair 7	LIBRARY CLERKS - LIBRARY CLERKS	-.225	1.256	.149	-.523	.072	-1.512	70	.135
Pair 8	REFLIB NO HELP - REFLIB NO HELP	-.169	1.265	.150	-.468	.130	-1.126	70	.264
Pair 9	UNSURE START- UNSURE START	.183	1.606	.191	-.197	.563	.960	70	.340
Pair 10	CONFUSED - CONFUSED	.042	1.651	.196	-.349	.433	.216	70	.830
Pair 11	NOT ON SHELF - NOT ON SHELF	.282	1.475	.175	-.068	.631	1.609	70	.112
Pair 12	UNAPPROACH - UNAPPROACH	.056	1.132	.134	-.212	.324	.419	70	.676

Pair 13	LEARNING NEW THINGS - LEARNING NEW THINGS	.000	1.373	.163	-.325	.325	.000	70	1.000
Pair 14	LIBRARY STAFF HELP - LIBRARY STAFF HELP	.070	1.437	.171	-.270	.411	.413	70	.681
Pair 15	COMFORTABLE USING LIBRARY COMFORTABLE USING LIBRARY	.000	1.171	.139	-.277	.277	.000	70	1.000
Pair 16	NO ONE AVAILABLE TO HELP - NO ONE AVAILABLE TO HELP	.000	1.183	.140	-.280	.280	.000	70	1.000
Pair 17	BOTHERING LIBRARIANS - BOTHERING LIBRARIANS	-.113	1.326	.157	-.427	.201	-.716	70	.476
Pair 18	FEEL SAFE - FEEL SAFE	.000	1.242	.147	-.294	.294	.000	70	1.000
Pair 19	FEEL COMFORTABLE FEEL COMFORTABLE	-.028	1.207	.143	-.314	.257	-.197	70	.845
Pair 20	UNFRIENDLY - UNFRIENDLY	-.042	1.357	.161	-.363	.279	-.262	70	.794
Pair 21	EQUIPMENT USE - EQUIPMENT USE	.183	1.257	.149	-.114	.481	1.227	70	.224
Pair 22	COMFORTABLE PLACE TO STUDY - COMFORTABLE PLACE TO STUDY	-.085	1.481	.176	-.435	.266	-.481	70	.632

Pair 23	NEVER HAS MATERIALS - NEVER HAS MATERIALS	-.141	1.246	.148	-.436	.154	-.953	70	.344
Pair 24	NEVER FIND THINGS - NEVER FIND THINGS	.028	1.207	.143	-.257	.314	.197	70	.845
Pair 25	CRIME – CRIME	.000	1.219	.145	-.289	.289	.000	70	1.000
Pair 26	CIRCULATION DESK WORKERS HELPFUL - CIRCULATION DESK WORKERS HELPFUL	-.338	1.320	.157	-.650	-.026	-2.158	70	.034
Pair 27	DON'T CARE ABOUT STUDENTS - DON'T CARE ABOUT STUDENTS	.042	1.114	.132	-.221	.306	.320	70	.750
Pair 28	IMPORTANT PART OF SCHOOL - IMPORTANT PART OF SCHOOL	.254	3.687	.438	-.619	1.126	.579	70	.564
Pair 29	LEARN TO DO OWN RESEARCH - LEARN TO DO OWN RESEARCH	-.085	1.442	.171	-.426	.257	-.494	70	.623
Pair 30	COPY MACHINES DON'T WORK - COPY MACHINES DON'T WORK	-.042	1.281	.152	-.345	.261	-.278	70	.782

Pair 31	OVERDUE FINES - OVERDUE FINES	-.254	1.583	.188	-.628	.121	-1.349	70	.182
Pair 32	COMPUTER INSTRUCTIONS - COMPUTER INSTRUCTIONS	-.127	1.319	.157	-.439	.186	-.810	70	.421
Pair 33	LIBRARIANS NO TIME TO HELP - LIBRARIANS NO TIME TO HELP	.000	1.298	.154	-.307	.307	.000	70	1.000
Pair 34	RULES TOO RESTRICTIVE - RULES TOO RESTRICTIVE	-.028	1.121	.133	-.293	.237	-.212	70	.833
Pair 35	PHYSICALLY SAFE - PHYSICALLY SAFE	.099	1.161	.138	-.176	.373	.716	70	.477
Pair 36	PRINTERS OUT OF PAPER - PRINTERS OUT OF PAPER	.070	1.428	.169	-.267	.408	.416	70	.679
Pair 37	COMPUTER USE DIRECTIONS UNCLEAR - COMPUTER USE DIRECTIONS UNCLEAR	.085	1.360	.161	-.237	.406	.524	70	.602
Pair 38	DON'T KNOW RESOURCES AVAILABLE - DON'T KNOW RESOURCES AVAILABLE	.042	1.378	.164	-.284	.368	.258	70	.797

Pair 39	STAFF DOESN'T LISTEN TO STUDENTS - STAFF DOESN'T LISTEN TO STUDENTS	-.070	1.175	.139	-.349	.208	-.505	70	.615
Pair 40	CHANGE MACHINE DOESN'T WORK - CHANGE MACHINE DOESN'T WORK	.113	1.128	.134	-.154	.380	.842	70	.403
Pair 41	SAFE PLACE - SAFE PLACE	-.028	1.195	.142	-.311	.255	-.199	70	.843
Pair 42	CHECK OUT - CHECK OUT	-.183	1.324	.157	-.496	.130	-1.166	70	.248
Pair 43	NO PLACE TO STUDY - NO PLACE TO STUDY	-.183	1.280	.152	-.486	.120	-1.206	70	.232

Appendix F

Library Anxiety Scale Pretest ANOVA, Post hoc Comparison, and Homogeneity Test of
Variance

Table 38

Library Anxiety Scale Pretest Analysis of Variance (ANOVA)

Statements		<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	Sig.
EMBARRASSED	Between	2.891	3	.964	.689	.562
	Groups					
	Within Groups	93.701	67	1.399		
	Total	96.592	70			
UNHELPFUL	Between	6.002	3	2.001	1.897	.138
	Groups					
	Within Groups	70.646	67	1.054		
	Total	76.648	70			
TELEPHONE	Between	4.411	3	1.470	1.623	.192
	Groups					
	Within Groups	60.688	67	.906		
	Total	65.099	70			
LIBRARY CLERKS	Between	4.416	3	1.472	2.272	.088
	Groups					
	Within Groups	43.415	67	.648		
	Total	47.831	70			
REFLIB NO HELP	Between	3.223	3	1.074	1.596	.198
	Groups					
	Within Groups	45.087	67	.673		
	Total	48.310	70			

UNSURE START	Between	3.682	3	1.227	.795	.501
	Groups					
	Within Groups	103.501	67	1.545		
	Total	107.183	70			
CONFUSED	Between	.255	3	.085	.067	.977
	Groups					
	Within Groups	85.323	67	1.273		
	Total	85.577	70			
NOT ON SHELF	Between	1.340	3	.447	.357	.784
	Groups					
	Within Groups	83.815	67	1.251		
	Total	85.155	70			
UNAPPROACHABLE	Between	3.065	3	1.022	1.781	.159
	Groups					
	Within Groups	38.428	67	.574		
	Total	41.493	70			
LEARNING NEW THINGS	Between	14.011	3	4.670	5.118	.003
	Groups					
	Within Groups	61.144	67	.913		
	Total	75.155	70			
BOTHERING LIBRARIANS	Between	.488	3	.163	.170	.916
	Groups					
	Within Groups	64.160	67	.958		
	Total	64.648	70			

UNFRIENDLY	Between	1.595	3	.532	.600	.617
	Groups					
	Within Groups	59.391	67	.886		
	Total	60.986	70			
NEVER HAS MATERIALS	Between	.924	3	.308	.433	.730
	Groups					
	Within Groups	47.723	67	.712		
	Total	48.648	70			
NEVER FIND THINGS	Between	.489	3	.163	.214	.886
	Groups					
	Within Groups	50.948	67	.760		
	Total	51.437	70			
LEARN TO DO OWN RESEARCH	Between	2.416	3	.805	.679	.568
	Groups					
	Within Groups	79.415	67	1.185		
	Total	81.831	70			
DON'T KNOW RESOURCES AVAILABLE	Between	7.783	3	2.594	2.487	.068
	Groups					
	Within Groups	69.879	67	1.043		
	Total	77.662	70			

Table 39

Library Anxiety Scale Pretest ANOVA Scheffe Post hoc Comparison

Statement	I	J	95% Confidence				
			PRE_ID PRE_ID		Interval		
			Mean			Lower	Upper
		Difference I-J	SE	Sig.	Bound	Bound	
EMBARRASSED	1	2	-.080	.455	.999	-1.38	1.22
		3	-.538	.385	.586	-1.64	.57
		4	.045	.481	1.000	-1.33	1.43
	2	1	.080	.455	.999	-1.22	1.38
		3	-.458	.540	.868	-2.01	1.09
		4	.125	.612	.998	-1.63	1.88
	3	1	.538	.385	.586	-.57	1.64
		2	.458	.540	.868	-1.09	2.01
		4	.583	.562	.783	-1.03	2.20
	4	1	-.045	.481	1.000	-1.43	1.33
		2	-.125	.612	.998	-1.88	1.63
		3	-.583	.562	.783	-2.20	1.03
UNHELPFUL	1	2	.364	.395	.838	-.77	1.50
		3	-.386	.334	.722	-1.35	.57
		4	.685	.418	.448	-.51	1.88
	2	1	-.364	.395	.838	-1.50	.77
		3	-.750	.469	.470	-2.09	.59
		4	.321	.531	.947	-1.20	1.85

	3	1	.386	.334	.722	-.57	1.35
		2	.750	.469	.470	-.59	2.09
		4	1.071	.488	.197	-.33	2.47
	4	1	-.685	.418	.448	-1.88	.51
		2	-.321	.531	.947	-1.85	1.20
		3	-1.071	.488	.197	-2.47	.33
TELEPHONE	1	2	.261	.366	.916	-.79	1.31
		3	-.447	.310	.559	-1.34	.44
		4	.458	.387	.707	-.65	1.57
	2	1	-.261	.366	.916	-1.31	.79
		3	-.708	.434	.453	-1.95	.54
		4	.196	.493	.984	-1.22	1.61
	3	1	.447	.310	.559	-.44	1.34
		2	.708	.434	.453	-.54	1.95
		4	.905	.453	.271	-.39	2.20
	4	1	-.458	.387	.707	-1.57	.65
		2	-.196	.493	.984	-1.61	1.22
		3	-.905	.453	.271	-2.20	.39
REF LIB NO HELP	1	2	.193	.315	.945	-.71	1.10
		3	-.515	.267	.302	-1.28	.25
		4	-.182	.334	.960	-1.14	.78
	2	1	-.193	.315	.945	-1.10	.71
		3	-.708	.374	.319	-1.78	.37
		4	-.375	.425	.854	-1.59	.84

	3	1	.515	.267	.302	-.25	1.28
		2	.708	.374	.319	-.37	1.78
		4	.333	.390	.866	-.79	1.45
	4	1	.182	.334	.960	-.78	1.14
		2	.375	.425	.854	-.84	1.59
		3	-.333	.390	.866	-1.45	.79
UNSURE START	1	2	-.477	.478	.802	-1.85	.89
		3	-.311	.405	.899	-1.47	.85
		4	-.620	.506	.683	-2.07	.83
	2	1	.477	.478	.802	-.89	1.85
		3	.167	.567	.993	-1.46	1.79
		4	-.143	.643	.997	-1.99	1.70
	3	1	.311	.405	.899	-.85	1.47
		2	-.167	.567	.993	-1.79	1.46
		4	-.310	.591	.965	-2.00	1.39
	4	1	.620	.506	.683	-.83	2.07
		2	.143	.643	.997	-1.70	1.99
		3	.310	.591	.965	-1.39	2.00
CONFUSED	1	2	-.023	.434	1.000	-1.27	1.22
		3	.061	.368	.999	-.99	1.11
		4	.192	.459	.982	-1.13	1.51
	2	1	.023	.434	1.000	-1.22	1.27
		3	.083	.515	.999	-1.39	1.56
		4	.214	.584	.987	-1.46	1.89

	3	1	-.061	.368	.999	-1.11	.99
		2	-.083	.515	.999	-1.56	1.39
		4	.131	.537	.996	-1.41	1.67
	4	1	-.192	.459	.982	-1.51	1.13
		2	-.214	.584	.987	-1.89	1.46
		3	-.131	.537	.996	-1.67	1.41
NOT ON SHELF	1	2	-.409	.430	.824	-1.64	.82
		3	-.159	.364	.979	-1.20	.89
		4	.055	.455	1.000	-1.25	1.36
	2	1	.409	.430	.824	-.82	1.64
		3	.250	.511	.971	-1.21	1.71
		4	.464	.579	.886	-1.20	2.12
	3	1	.159	.364	.979	-.89	1.20
		2	-.250	.511	.971	-1.71	1.21
		4	.214	.532	.983	-1.31	1.74
	4	1	-.055	.455	1.000	-1.36	1.25
		2	-.464	.579	.886	-2.12	1.20
		3	-.214	.532	.983	-1.74	1.31
UNAPPROACHABLE	1	2	.216	.291	.907	-.62	1.05
		3	-.492	.247	.272	-1.20	.21
		4	-.159	.308	.966	-1.04	.72
	2	1	-.216	.291	.907	-1.05	.62
		3	-.708	.346	.251	-1.70	.28
		4	-.375	.392	.822	-1.50	.75

	3	1	.492	.247	.272	-.21	1.20
		2	.708	.346	.251	-.28	1.70
		4	.333	.360	.836	-.70	1.37
	4	1	.159	.308	.966	-.72	1.04
		2	.375	.392	.822	-.75	1.50
		3	-.333	.360	.836	-1.37	.70
LEARNING NEW	1	2	.727	.367	.279	-.33	1.78
THINGS		3	-.856	.311	.065	-1.75	.04
		4	-.523	.389	.615	-1.64	.59
	2	1	-.727	.367	.279	-1.78	.33
		3	-1.583*	.436	.007	-2.83	-.33
		4	-1.250	.494	.105	-2.67	.17
	3	1	.856	.311	.065	-.04	1.75
		2	1.583*	.436	.007	.33	2.83
		4	.333	.454	.910	-.97	1.64
	4	1	.523	.389	.615	-.59	1.64
		2	1.250	.494	.105	-.17	2.67
		3	-.333	.454	.910	-1.64	.97
	1	2	-.080	.364	.997	-1.12	.96
		3	.129	.309	.981	-.76	1.01
		4	.081	.385	.998	-1.02	1.19
	2	1	.080	.364	.997	-.96	1.12
		3	.208	.432	.972	-1.03	1.45
		4	.161	.490	.991	-1.25	1.57

	3	1	-.129	.309	.981	-1.01	.76
		2	-.208	.432	.972	-1.45	1.03
		4	-.048	.451	1.000	-1.34	1.24
	4	1	-.081	.385	.998	-1.19	1.02
		2	-.161	.490	.991	-1.57	1.25
		3	.048	.451	1.000	-1.24	1.34
BOTHERING	1	2	.091	.376	.996	-.99	1.17
LIBRARIANS		3	-.076	.319	.996	-.99	.84
		4	.234	.398	.951	-.91	1.38
	2	1	-.091	.376	.996	-1.17	.99
		3	-.167	.447	.987	-1.45	1.11
		4	.143	.506	.994	-1.31	1.60
	3	1	.076	.319	.996	-.84	.99
		2	.167	.447	.987	-1.11	1.45
		4	.310	.465	.931	-1.03	1.64
	4	1	-.234	.398	.951	-1.38	.91
		2	-.143	.506	.994	-1.60	1.31
		3	-.310	.465	.931	-1.64	1.03
UNFRIENDLY	1	2	.182	.362	.968	-.86	1.22
		3	-.235	.307	.899	-1.11	.64
		4	-.354	.383	.836	-1.45	.74
	2	1	-.182	.362	.968	-1.22	.86
		3	-.417	.430	.816	-1.65	.82
		4	-.536	.487	.751	-1.93	.86

	3	1	.235	.307	.899	-.64	1.11
		2	.417	.430	.816	-.82	1.65
		4	-.119	.448	.995	-1.40	1.17
	4	1	.354	.383	.836	-.74	1.45
		2	.536	.487	.751	-.86	1.93
		3	.119	.448	.995	-1.17	1.40
NEVER HAS	1	2	.011	.324	1.000	-.92	.94
MATERIALS		3	.303	.275	.750	-.49	1.09
		4	.136	.343	.984	-.85	1.12
	2	1	-.011	.324	1.000	-.94	.92
		3	.292	.385	.902	-.81	1.40
		4	.125	.437	.994	-1.13	1.38
	3	1	-.303	.275	.750	-1.09	.49
		2	-.292	.385	.902	-1.40	.81
		4	-.167	.401	.982	-1.32	.98
	4	1	-.136	.343	.984	-1.12	.85
		2	-.125	.437	.994	-1.38	1.13
		3	.167	.401	.982	-.98	1.32
NEVER FIND	1	2	-.102	.335	.993	-1.06	.86
THINGS		3	.189	.284	.930	-.63	1.00
		4	-.013	.355	1.000	-1.03	1.00
	2	1	.102	.335	.993	-.86	1.06
		3	.292	.398	.910	-.85	1.43
		4	.089	.451	.998	-1.21	1.38

	3	1	-.189	.284	.930	-1.00	.63
		2	-.292	.398	.910	-1.43	.85
		4	-.202	.415	.971	-1.39	.99
	4	1	.013	.355	1.000	-1.00	1.03
		2	-.089	.451	.998	-1.38	1.21
		3	.202	.415	.971	-.99	1.39
LEARN TO DO OWN	1	2	-.170	.418	.983	-1.37	1.03
RESEARCH		3	-.462	.355	.639	-1.48	.55
		4	.133	.443	.993	-1.14	1.40
	2	1	.170	.418	.983	-1.03	1.37
		3	-.292	.497	.951	-1.72	1.13
		4	.304	.563	.962	-1.31	1.92
	3	1	.462	.355	.639	-.55	1.48
		2	.292	.497	.951	-1.13	1.72
		4	.595	.518	.725	-.89	2.08
	4	1	-.133	.443	.993	-1.40	1.14
		2	-.304	.563	.962	-1.92	1.31
		3	-.595	.518	.725	-2.08	.89
DON'T KNOW	1	2	.920	.393	.150	-.21	2.05
RESOURCES		3	-.288	.333	.861	-1.24	.67
AVAILABLE		4	.260	.416	.942	-.93	1.45
	2	1	-.920	.393	.150	-2.05	.21
		3	-1.208	.466	.092	-2.55	.13
		4	-.661	.529	.669	-2.18	.86

3	1	.288	.333	.861	-.67	1.24
	2	1.208	.466	.092	-.13	2.55
	4	.548	.486	.737	-.85	1.94
4	1	-.260	.416	.942	-1.45	.93
	2	.661	.529	.669	-.86	2.18
	3	-.548	.486	.737	-1.94	.85

*. $p < .05$ (2-tailed).

Table 40

*Library Anxiety Scale Pretest Levene's Test of Homogeneity of**Variance*

Statement	Levene's	<i>df1</i>	<i>df2</i>	Sig.
EMBARRASSED	2.069	3	67	.113
NOT HELPFUL	1.225	3	67	.307
ON PHONE	3.807	3	67	.014
NO TIME TO HELP	1.364	3	67	.261
UNSURE START	1.476	3	67	.229
CONFUSED	1.343	3	67	.268
NOT ON SHELF	.127	3	67	.944
NOT APPROACHABLE	1.645	3	67	.187
LEARNING NEW THINGS	1.964	3	67	.128
COMFORTABLE	.182	3	67	.908
BOTHER	.491	3	67	.690
NOT FRIENDLY	1.442	3	67	.238
NEVER HAS MATERIALS	4.679	3	67	.005
NEVER FIND THINGS	3.635	3	67	.017
LEARN TO DO	.985	3	67	.405
RESEARCH				
NO TIME TO HELP ME	.102	3	67	.959
DON'T KNOW	3.583	3	67	.018
RESOURCES				
AVAILABLE				

Appendix G

Library Anxiety Scale Posttest ANOVA, Post hoc Comparison, and Homogeneity Test of
Variance

Table 41

Library Anxiety Scale Posttest ANOVA

Statement		<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>Sig.</i>
EMBARRASSED	Between Groups	3.062	3	1.021	.787	.506
	Within Groups	86.910	67	1.297		
	Total	89.972	70			
NOT HELPFUL	Between Groups	3.435	3	1.145	.868	.462
	Within Groups	88.396	67	1.319		
	Total	91.831	70			
ON PHONE	Between Groups	7.729	3	2.576	3.413	.022
	Within Groups	50.581	67	.755		
	Total	58.310	70			
NO TIME TO HELP	Between Groups	3.835	3	1.278	1.508	.221
	Within Groups	56.813	67	.848		
	Total	60.648	70			
UNSURE START	Between Groups	6.890	3	2.297	1.622	.192
	Within Groups	94.857	67	1.416		
	Total	101.746	70			
CONFUSED	Between Groups	2.657	3	.886	.670	.573
	Within Groups	88.498	67	1.321		
	Total	91.155	70			
NOT ON SHELF	Between Groups	.897	3	.299	.260	.854
	Within Groups	76.962	67	1.149		
	Total	77.859	70			

NOT APPROACHABLE	Between Groups	6.552	3	2.184	3.846	.013
	Within Groups	38.040	67	.568		
	Total	44.592	70			
LEARNING NEW THINGS	Between Groups	5.283	3	1.761	1.836	.149
	Within Groups	64.266	67	.959		
	Total	69.549	70			
COMFORTABLE	Between Groups	.890	3	.297	.256	.856
	Within Groups	77.504	67	1.157		
	Total	78.394	70			
BOTHER	Between Groups	2.217	3	.739	.666	.576
	Within Groups	74.403	67	1.110		
	Total	76.620	70			
NOT FRIENDLY	Between Groups	3.154	3	1.051	.968	.413
	Within Groups	72.790	67	1.086		
	Total	75.944	70			
NEVER HAS MATERIALS	Between Groups	1.598	3	.533	.635	.595
	Within Groups	56.233	67	.839		
	Total	57.831	70			
NEVER FIND THINGS	Between Groups	1.036	3	.345	.451	.718
	Within Groups	51.358	67	.767		
	Total	52.394	70			
LEARN TO DO OWN RESEARCH	Between Groups	.695	3	.232	.174	.914
	Within Groups	89.164	67	1.331		
	Total	89.859	70			

OVERDUE FINES	Between Groups	3.234	3	1.078	.906	.443
	Within Groups	79.723	67	1.190		
	Total	82.958	70			
NO TIME TO HELP ME	Between Groups	4.754	3	1.585	2.709	.052
	Within Groups	39.190	67	.585		
	Total	43.944	70			
DON'T KNOW	Between Groups	.717	3	.239	.185	.906
RESOURCES	Within Groups	86.607	67	1.293		
AVAILABLE	Total	87.324	70			

Table 42
Library Anxiety Scale Posttest ANOVA Scheffe Post hoc Test

Dependent Variable	I GROUPID	J GROUPID	95% Confidence						
			POST	POST	Mean			Interval	
					Difference		Sig.	Lower	Upper
					I-J	SE		Bound	Bound
EMBARRASSED	1	2	-.659	.438	.523	-1.91	.60		
		3	.008	.371	1.000	-1.06	1.07		
		4	-.052	.463	1.000	-1.38	1.28		
	2	1	.659	.438	.523	-.60	1.91		
		3	.667	.520	.651	-.82	2.16		
		4	.607	.589	.787	-1.08	2.30		
	3	1	-.008	.371	1.000	-1.07	1.06		
		2	-.667	.520	.651	-2.16	.82		
		4	-.060	.542	1.000	-1.61	1.49		
	4	1	.052	.463	1.000	-1.28	1.38		
		2	-.607	.589	.787	-2.30	1.08		
		3	.060	.542	1.000	-1.49	1.61		
NOT HELPFUL	1	2	-.614	.441	.589	-1.88	.65		
		3	.136	.374	.988	-.94	1.21		
		4	-.292	.467	.942	-1.63	1.05		
	2	1	.614	.441	.589	-.65	1.88		
		3	.750	.524	.566	-.75	2.25		
		4	.321	.594	.961	-1.38	2.03		

	3	1	-.136	.374	.988	-1.21	.94
		2	-.750	.524	.566	-2.25	.75
		4	-.429	.546	.892	-2.00	1.14
	4	1	.292	.467	.942	-1.05	1.63
		2	-.321	.594	.961	-2.03	1.38
		3	.429	.546	.892	-1.14	2.00
ON PHONE	1	2	.239	.334	.916	-.72	1.20
		3	.197	.283	.922	-.61	1.01
		4	-.994	.354	.057	-2.01	.02
	2	1	-.239	.334	.916	-1.20	.72
		3	-.042	.397	1.000	-1.18	1.10
		4	-1.232	.450	.067	-2.52	.06
	3	1	-.197	.283	.922	-1.01	.61
		2	.042	.397	1.000	-1.10	1.18
		4	-1.190*	.413	.049	-2.38	-.01
	4	1	.994	.354	.057	-.02	2.01
		2	1.232	.450	.067	-.06	2.52
		3	1.190*	.413	.049	.01	2.38
NO TIME TO HELP	1	2	.114	.354	.991	-.90	1.13
		3	.447	.300	.532	-.41	1.31
		4	-.458	.375	.685	-1.53	.62
	2	1	-.114	.354	.991	-1.13	.90
		3	.333	.420	.889	-.87	1.54
		4	-.571	.477	.698	-1.94	.80

	3	1	-.447	.300	.532	-1.31	.41
		2	-.333	.420	.889	-1.54	.87
		4	-.905	.438	.244	-2.16	.35
	4	1	.458	.375	.685	-.62	1.53
		2	.571	.477	.698	-.80	1.94
		3	.905	.438	.244	-.35	2.16
UNSURE START	1	2	-.966	.457	.226	-2.28	.35
		3	-.008	.388	1.000	-1.12	1.10
		4	.123	.484	.996	-1.27	1.51
	2	1	.966	.457	.226	-.35	2.28
		3	.958	.543	.382	-.60	2.52
		4	1.089	.616	.379	-.68	2.86
	3	1	.008	.388	1.000	-1.10	1.12
		2	-.958	.543	.382	-2.52	.60
		4	.131	.566	.997	-1.49	1.75
	4	1	-.123	.484	.996	-1.51	1.27
		2	-1.089	.616	.379	-2.86	.68
		3	-.131	.566	.997	-1.75	1.49
CONFUSED	1	2	-.170	.442	.985	-1.44	1.10
		3	.455	.374	.689	-.62	1.53
		4	-.117	.468	.996	-1.46	1.22
	2	1	.170	.442	.985	-1.10	1.44
		3	.625	.525	.702	-.88	2.13
		4	.054	.595	1.000	-1.65	1.76

	3	1	-.455	.374	.689	-1.53	.62
		2	-.625	.525	.702	-2.13	.88
		4	-.571	.547	.779	-2.14	1.00
	4	1	.117	.468	.996	-1.22	1.46
		2	-.054	.595	1.000	-1.76	1.65
		3	.571	.547	.779	-1.00	2.14
NOT ON SHELF	1	2	-.068	.412	.999	-1.25	1.11
		3	.265	.349	.901	-.74	1.27
		4	.182	.436	.982	-1.07	1.43
	2	1	.068	.412	.999	-1.11	1.25
		3	.333	.489	.926	-1.07	1.74
		4	.250	.555	.977	-1.34	1.84
	3	1	-.265	.349	.901	-1.27	.74
		2	-.333	.489	.926	-1.74	1.07
		4	-.083	.510	.999	-1.55	1.38
	4	1	-.182	.436	.982	-1.43	1.07
		2	-.250	.555	.977	-1.84	1.34
		3	.083	.510	.999	-1.38	1.55
NOT APPROACHABLE	1	2	.705	.290	.126	-.13	1.54
		3	.371	.245	.519	-.33	1.07
		4	-.474	.307	.500	-1.35	.41
	2	1	-.705	.290	.126	-1.54	.13
		3	-.333	.344	.816	-1.32	.65
		4	-1.179*	.390	.035	-2.30	-.06

	3	1	-.371	.245	.519	-1.07	.33
		2	.333	.344	.816	-.65	1.32
		4	-.845	.358	.146	-1.87	.18
	4	1	.474	.307	.500	-.41	1.35
		2	1.179*	.390	.035	.06	2.30
		3	.845	.358	.146	-.18	1.87
LEARNING NEW	1	2	.705	.376	.329	-.38	1.78
THINGS		3	-.045	.319	.999	-.96	.87
		4	-.438	.399	.751	-1.58	.70
	2	1	-.705	.376	.329	-1.78	.38
		3	-.750	.447	.427	-2.03	.53
		4	-1.143	.507	.177	-2.60	.31
	3	1	.045	.319	.999	-.87	.96
		2	.750	.447	.427	-.53	2.03
		4	-.393	.466	.870	-1.73	.94
	4	1	.438	.399	.751	-.70	1.58
		2	1.143	.507	.177	-.31	2.60
		3	.393	.466	.870	-.94	1.73
COMFORTABLE	1	2	-.295	.413	.916	-1.48	.89
		3	-.212	.350	.947	-1.22	.79
		4	-.010	.438	1.000	-1.26	1.25
	2	1	.295	.413	.916	-.89	1.48
		3	.083	.491	.999	-1.32	1.49
		4	.286	.557	.966	-1.31	1.88

	3	1	.212	.350	.947	-.79	1.22
		2	-.083	.491	.999	-1.49	1.32
		4	.202	.512	.984	-1.26	1.67
	4	1	.010	.438	1.000	-1.25	1.26
		2	-.286	.557	.966	-1.88	1.31
		3	-.202	.512	.984	-1.67	1.26
BOTHER	1	2	.318	.405	.892	-.84	1.48
		3	.318	.343	.835	-.67	1.30
		4	.461	.429	.764	-.77	1.69
	2	1	-.318	.405	.892	-1.48	.84
		3	.000	.481	1.000	-1.38	1.38
		4	.143	.545	.995	-1.42	1.71
	3	1	-.318	.343	.835	-1.30	.67
		2	.000	.481	1.000	-1.38	1.38
		4	.143	.501	.994	-1.29	1.58
	4	1	-.461	.429	.764	-1.69	.77
		2	-.143	.545	.995	-1.71	1.42
		3	-.143	.501	.994	-1.58	1.29
NOT FRIENDLY	1	2	.205	.401	.967	-.94	1.35
		3	-.212	.339	.942	-1.19	.76
		4	-.617	.424	.552	-1.83	.60
	2	1	-.205	.401	.967	-1.35	.94
		3	-.417	.476	.857	-1.78	.95
		4	-.821	.539	.513	-2.37	.73

	3	1	.212	.339	.942	-.76	1.19
		2	.417	.476	.857	-.95	1.78
		4	-.405	.496	.881	-1.83	1.02
	4	1	.617	.424	.552	-.60	1.83
		2	.821	.539	.513	-.73	2.37
		3	.405	.496	.881	-1.02	1.83
NEVER HAS	1	2	-.148	.352	.981	-1.16	.86
MATERIALS		3	.311	.298	.781	-.55	1.17
		4	-.201	.373	.961	-1.27	.87
	2	1	.148	.352	.981	-.86	1.16
		3	.458	.418	.753	-.74	1.66
		4	-.054	.474	1.000	-1.41	1.31
	3	1	-.311	.298	.781	-1.17	.55
		2	-.458	.418	.753	-1.66	.74
		4	-.512	.436	.711	-1.76	.74
	4	1	.201	.373	.961	-.87	1.27
		2	.054	.474	1.000	-1.31	1.41
		3	.512	.436	.711	-.74	1.76
NEVER FIND	1	2	.273	.337	.883	-.69	1.24
THINGS		3	.189	.285	.931	-.63	1.01
		4	-.156	.356	.979	-1.18	.87
	2	1	-.273	.337	.883	-1.24	.69
		3	-.083	.400	.998	-1.23	1.06
		4	-.429	.453	.827	-1.73	.87

	3	1	-.189	.285	.931	-1.01	.63
		2	.083	.400	.998	-1.06	1.23
		4	-.345	.416	.876	-1.54	.85
	4	1	.156	.356	.979	-.87	1.18
		2	.429	.453	.827	-.87	1.73
		3	.345	.416	.876	-.85	1.54
LEARN TO DO	1	2	.261	.443	.951	-1.01	1.53
OWN RESEARCH		3	-.114	.376	.993	-1.19	.96
		4	.029	.469	1.000	-1.32	1.38
	2	1	-.261	.443	.951	-1.53	1.01
		3	-.375	.527	.917	-1.89	1.14
		4	-.232	.597	.985	-1.94	1.48
	3	1	.114	.376	.993	-.96	1.19
		2	.375	.527	.917	-1.14	1.89
		4	.143	.549	.995	-1.43	1.72
	4	1	-.029	.469	1.000	-1.38	1.32
		2	.232	.597	.985	-1.48	1.94
		3	-.143	.549	.995	-1.72	1.43
OVERDUE FINES	1	2	.011	.419	1.000	-1.19	1.21
		3	-.197	.355	.958	-1.22	.82
		4	.636	.444	.564	-.64	1.91
	2	1	-.011	.419	1.000	-1.21	1.19
		3	-.208	.498	.981	-1.64	1.22
		4	.625	.565	.747	-.99	2.24

	3	1	.197	.355	.958	-.82	1.22
		2	.208	.498	.981	-1.22	1.64
		4	.833	.519	.466	-.65	2.32
	4	1	-.636	.444	.564	-1.91	.64
		2	-.625	.565	.747	-2.24	.99
		3	-.833	.519	.466	-2.32	.65
NO TIME TO HELP	1	2	.716	.294	.126	-.13	1.56
ME		3	.341	.249	.602	-.37	1.06
		4	-.195	.311	.942	-1.09	.70
	2	1	-.716	.294	.126	-1.56	.13
		3	-.375	.349	.764	-1.38	.63
		4	-.911	.396	.162	-2.05	.22
	3	1	-.341	.249	.602	-1.06	.37
		2	.375	.349	.764	-.63	1.38
		4	-.536	.364	.542	-1.58	.51
	4	1	.195	.311	.942	-.70	1.09
		2	.911	.396	.162	-.22	2.05
		3	.536	.364	.542	-.51	1.58
DON'T KNOW	1	2	.034	.437	1.000	-1.22	1.29
RESOURCES		3	.076	.370	.998	-.99	1.14
AVAILABLE		4	-.305	.463	.933	-1.63	1.02
	2	1	-.034	.437	1.000	-1.29	1.22
		3	.042	.519	1.000	-1.45	1.53
		4	-.339	.588	.953	-2.03	1.35

3	1	-.076	.370	.998	-1.14	.99
	2	-.042	.519	1.000	-1.53	1.45
	4	-.381	.541	.919	-1.93	1.17
4	1	.305	.463	.933	-1.02	1.63
	2	.339	.588	.953	-1.35	2.03
	3	.381	.541	.919	-1.17	1.93

*. $p < 0.05$ level (2-tailed).

Table 43

Library Anxiety Scale Posttest ANOVA Test of Homogeneity

Statement	Levene's	df1	df2	Sig.
EMBARRASSED	1.414	3	67	.246
NOT HELPFUL	3.538	3	67	.019
ON PHONE	1.187	3	67	.321
NO TIME TO HELP	.881	3	67	.456
UNSURE START	1.366	3	67	.261
CONFUSED	.816	3	67	.490
NOT ON SHELF	3.406	3	67	.022
NOT APPROACHABLE	.667	3	67	.575
LEARNING NEW THINGS	1.567	3	67	.206
COMFORTABLE	1.100	3	67	.355
BOTHER	.073	3	67	.974
NOT FRIENDLY	1.170	3	67	.328
NEVER HAS MATERIALS	.848	3	67	.473
NEVER FIND THINGS	.491	3	67	.690
LEARN TO DO OWN	2.303	3	67	.085
RESEARCH				
OVERDUE FINES	.294	3	67	.830
NO TIME TO HELP ME	.718	3	67	.545
DON'T KNOW	1.281	3	67	.288
RESOURCES				
AVAILABLE				