

AN INVESTIGATION OF THE INFORMATION PRACTICES
OF EDUCATION DOCTORAL STUDENTS

CORINNE G. BISHOP
M.S. Florida State University, 2005
B.A. University of Central Florida, 1999

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Major Professor: Glenda A. Gunter

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ABSTRACT

Academic libraries are increasingly re-envisioning their services to provide expanded outreach and segmented programming for specific user groups. Many academic libraries offer segmented services and programming for undergraduate groups such as first-year experience programs and general education programs. Currently, academic libraries are also identifying and expanding their services and programming to meet the unique needs of graduate groups. In conjunction with this focus, the roles of academic librarians are also expanding in the area of outreach. In essence, academic librarians are becoming more directly involved in aligning library services and programming with academic programs and promoting change within their institutions. Faced with the challenges of outreach and promoting change it is essential that librarians gain deeper insights about the perspectives and needs of graduate programs and graduate groups to effectively plan and align library services.

The purpose of this design research study was to explore the organizational factors that influence how library services and library instruction are utilized in two doctoral programs in education at the University of Central Florida (UCF). Using a sequential mixed methods approach, quantitative data was collected in an online survey and qualitative data was collected in audio recorded interviews conducted with students enrolled in two doctoral programs in education, as well as program faculty, and academic librarians. Findings from this study were then used to describe a conjecture for an asynchronous online learning resource that applies elements outlined in Sandoval's (2014) conjecture map model. Findings were also used to make recommendations about future planning for library outreach and the utilization of library services in the doctoral programs.

This accomplishment is dedicated to my husband, Fred and to our three very wonderful and cherished daughters Angela, Erin, and Elizabeth. You each have my special thanks for your patience and for the support and encouragement you gave me during the years it has taken me to accomplish this goal. I also dedicate this accomplishment to my grandfather, John Marnell who was an inspiration to me as someone who always maintained a sense of humor, worked hard, and consistently gave it his best.

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LIST OF ABBREVIATIONS

AACU	Association of American Colleges and Universities
AASL	American Association of School Librarians
ACRL	Association of College & Research Libraries
ACS	Associated Colleges of the South
AECT	Association of Educational and Communications Technology
ALA	American Libraries Association
ARL	Association of Research Libraries
B-TILED	Beile Test for Information Literacy Instruction for Education
CEHP	College of Education and Human Performance
Education EdD	Doctor of Education
Educational Leadership EdD	Doctor of Educational Leadership, Executive Track
ISTE	International Society for Technology in Education
NCATE	National Council for the Accreditation of Teacher Education
NCES	National Center for Education Statistics
NETS•T	National Education Technology Standards for Teachers
QEP	Quality Enhancement Plan
SACSCOC	Southern Assoc. of Colleges & Schools Commission on Colleges
SCONUL	Society of College, National, and University Libraries
UNESCO	United Nations Educational, Scientific and Cultural Organization
VALUE	Valid Assessment of Learning in Undergraduate Education

CHAPTER ONE: INTRODUCTION

Introduction

Academic libraries are increasingly re-envisioning their services to provide expanded outreach and segmented programming for specific user groups. Many academic libraries offer segmented services and programming for undergraduate groups such as first-year experience programs and general education programs. Currently, academic libraries are also identifying and expanding their services and programming to meet the unique needs of graduate groups. In conjunction with this focus, the roles of academic librarians are also expanding in the area of outreach. In essence, academic librarians are becoming more directly involved in aligning library services and programming with academic programs and promoting change within their institutions. Faced with the challenges of outreach and promoting change it is essential that librarians gain deeper insights about the perspectives and needs of graduate programs and graduate groups to most effectively plan and align library services.

As described in reports published by the Association of College & Research Libraries (ACRL), the Association of Research Libraries (ARL), and discussions found in the Library and Information Science literature the factors influencing the focus on expanded programming come in part as a response to the diverse needs of graduate students and the changing roles of academic librarians in outreach. Projected increases and trends in graduate enrollments are also influencing the focus on re-envisioned academic library services. Reports from the National Center for Education Statistics (NCES, 2013) as well as national reports that include *The Path Forward: The Future of Graduate Education in the United States* (2010) and *Pathways Through Graduate School Into Careers* (2012), which are published by the Council of Graduate Schools and the

Educational Testing Service (2010), and the Council of Graduate Schools' report, *Graduate Education: The Backbone of American Competitiveness and Innovation* (2007) each discuss trends and offer insights about the potential changes in graduate enrollments that may affect how libraries provide future graduate-level programming.

Publications sponsored by ACRL and ARL organizations outline the goals of expanded library services and programming and the changing roles of academic librarians in providing outreach. ACRL is a division of the American Library Association (ALA) and serves as the professional association for academic librarians. A major emphasis of the association is to enhance the ability of information professionals to serve the information needs of the higher education community related to teaching and learning and research (ACRL, About ACRL, n.d.). Additionally, ARL represents a community of approximately 125 research libraries in the United States and Canada that include university, public, national, and special libraries. The focus of ARL is on engagement and collaboration that is directed toward informing policies, services, collections, and projects that impact research libraries (ARL Membership, 2013). Issues and trends outlined in publications sponsored by both ACRL and ARL organizations are viewed as highly relevant to the services and programs offered by academic research libraries.

In an ARL sponsored report, authors Covert-Vail and Collard (2012) discuss the results of an environmental scan that investigated graduate-student programming offered at nine ARL libraries and one non-ARL library (University of Washington, University of Guelph, Cornell University, Oregon State University, University of Illinois Urbana-Champaign, New York University, University of Connecticut, Oklahoma State University, and Indiana University, Bloomington). Interviews were conducted with library directors and librarians who provide programs and services for graduate students at their institutions. The findings suggest that efforts

at participating institutions were focused on outreach, instruction, consultation, and technology with the goal of meeting the needs of diverse graduate groups and differentiating services for graduate students by discipline areas or programs of study. At libraries where distinct services and/or programs for graduate students were already being offered, interviewees noted that decisions to provide segmented services were based on the need to fit library services to the academic needs of graduate student populations.

Covert-Vail and Collard (2012) explain, “Key variables in graduate student diversity included demographic pressures; resource inequality among academic departments and programs, and even the terminal degree sought; the academic lifecycle; and the consequences of the multiple roles graduate students occupy” (p. 5). Interviewees also reported that segmented library services were triggered by a variety of forces that included explicit requests from graduate students. The report provides a list of recommended areas of focus for other libraries planning expanded graduate services. Recommendations included developing a suite of distinct user services, designing functional library spaces, assessing the needs of graduate students, developing campus collaborations to align library services, creating internal library structures to support re-envisioned library services, providing staff development to support graduate students, and learning from other research libraries.

A related whitepaper sponsored by the ACRL titled, *Intersections of Scholarly Communication and Information Literacy: Creating Strategic Collaborations for a Changing Academic Environment* (ACRL, 2013), also articulates the connections between information literacy and scholarly communication and the benefits to students in gaining a grounded knowledge in these areas. Three broad areas outlined in whitepaper that are currently influencing library programming include: the economics associated with the distribution of scholarship,

which relates to publishing costs, constraints on educational funding, and government mandates to provide open access content; digital literacies and the progressive use of non-text content, which relates to new formats of scholarship, usage patterns of collections, and digital rights issues; and the involvement of academic librarians in shaping structures that support scholarship, which relates to outreach, scholarly output, and the use of institutional repositories. Gaining a grounded understanding of the issues related to these areas can benefit graduate students by helping them to become knowledgeable consumers of information in their discipline area and in relation to their research and publishing.

Additionally, trends associated with the changing roles of academic librarians also provide the perspective that to effectively integrate information literacy and library services with academic programs and support graduate students in the practices of scholarship, academic librarians must broaden their outreach efforts to build stronger connections between library services and academic programs. In a report sponsored by ARL, titled *New Roles for New Times: Transforming Liaison Roles in Research Libraries*, authors Jaguszewski and Williams (2013) offer additional insights about the changing roles of academic librarians. The authors discuss findings from interviews they conducted with administrators at five ARL libraries (Duke University, University of Guelph, Massachusetts Institute of Technology, North Carolina State University, and Purdue University) and offer insights from their own experiences. Their report describes six areas associated with the changing roles of academic librarians, and the authors note, “The overarching framework for all of the changes is an increasing focus on what users do (research, and teaching and learning) rather than on what librarians do (collections, research/reference, library instruction)” (p. 4). Examples related to library instruction included the need for academic librarians to gain a broader understanding of specific disciplinary

requirements that go beyond a familiarity with subject collections and subject-related research tools. Collaboration was also described as a key focus to build partnerships with program faculty. Additionally, cross-institutional partnerships were highlighted to expand relationships with other campus units that also provide support for faculty and students, and collaborations with other research libraries and institutions were also suggested.

Articles found in the Library and Information Science literature also describe the changing roles of academic librarians that are based on a greater focus on outreach, the evolving support services provided by subject librarians (also referred to as subject liaisons), and the evolving roles of embedded librarians. Subject librarians are typically assigned to specific colleges or programs to provide library outreach and support services such as library instruction (also referred to as information literacy instruction), research consultations, and collection development. In relation to the expanding role of subject librarians and newer embedded librarian models, some of the existing duties of librarians are expanding to include a focus on broader collaborations with program faculty by co-developing course and online assignments and instructional materials and/or serving as embedded librarians in face-to-face courses as well as providing discipline-related support in online courses. In some cases newer embedded librarian models involve librarians taking up residence within academic departments to support students and faculty. Overall, duties that define the expanding role of subject librarians and embedded services involve partnerships with academic programs and/or other campus units to facilitate closer working relationships between librarians, student groups, and academic programs. Several authors have described aspects of these expanded duties and suggest that they allow librarians to provide more in-depth, subject-related support (McMillen & Fabbi, 2010; Rudin, 2008; Shumaker, 2014; York & Vance, 2009). Additionally, in a literature review

provided by Thull and Hansen (2009) practices associated with embedded and subject librarians duties and the benefits and constraints of promoting library services for programs are discussed.

Academic libraries are also decidedly focused on identifying their impact and the value of contributions made by library programs and services within their institutions. In the ACRL sponsored report, *Value of Academic Libraries*, Oakleaf (2010) outlines 22 areas that describe how libraries and librarians can articulate their value and impact. Two areas most closely related to this study include teaching and learning, which involve a focus on identifying authentic and course integrated assessments to capture library impact related to student learning and a focus on identifying how librarians support program faculty in their teaching.

Common threads represented in each of the reports and papers previously described suggest that outreach and planning of potential library programs and services for specific graduate groups requires broader engagement by academic (subject) librarians with program faculty and graduate students. To facilitate potential expansions or additions to existing library services librarians must first gain deeper insights about the perspectives, dispositions, and needs of constituent groups. As such, library planning may benefit from adopting a broader *systems approach* (Senge, 2006) and exploring organizational factors that influence the utilization of library services within academic programs. In a discussion of organizational change and organizational learning, Boyce (2003) notes, “The challenge of successful change is less planning and implementing and more developing and sustaining new ways of seeing, deciding, and acting” (p. 133).

Statement of the Problem

Academic libraries are exploring expanded outreach and programming for specific graduate groups and investigating methods to more closely align library services with academic programs, but no clear path has been identified to promote these changes. Promoting expanded programming and services will involve identifying the needs of academic programs and graduate groups. Additionally, the learning outcomes addressed in the existing Information Literacy Competency Standards for Higher Education (ACRL, 2000) form the basis for many academic library instruction programs; however, the current standards primarily address competencies at the undergraduate level. Furthermore, even though information literacy initiatives have gained prominence in the academy initiatives are often viewed as library-centric, which has had a limiting effect on their broader adoption across the academic curricula. An additional challenge is that few studies have attempted to define learning outcomes for graduate students and often librarians are unaware of the specific needs of academic programs and graduate groups. In some cases, academic librarians may also be unfamiliar with graduate-level research requirements and processes. Overall, the lack of consensus about what constitutes library outreach and library research competencies for graduate students, as well as the lack of a clear path to identify the needs of specific programs and graduate groups can limit the adoption of expanded library services. Faced with these challenges, it is important that subject librarians gain deeper insights about the perspectives, dispositions, and needs of programs and graduate groups. It is equally important that subject librarians examine their own assumptions about how to implement and support services and programming to effectively align them with programs.

Purpose of Study

The purpose of this design research study was to explore the organizational factors that influence how library services and library instruction are utilized in two doctoral programs in education at the University of Central Florida (UCF). To answer this overarching research question, a sequential mixed methods approach was used to collect quantitative and qualitative data.

Study Design

This study uses the Educational Design Research model that is described by McKenney and Reeves (2012), which is referred to as design research in this study. In their generic model, which is informed by the fields of instructional design and curriculum development, McKenney and Reeves (2012) describe three main phases: the analysis and exploration phase, the design and construction phase, and the evaluation and reflection phase. In this study, the analysis and exploration phase and the design and construction phase were completed.

McKenney and Reeves (2012) note that it is common in design research to use overarching research questions and then to distinguish sets of research questions based on the design micro-cycles or phases that are completed in a study. The authors also note that design research includes a dual focus on contributing to theory as well as envisioning practical solutions to instructional problems. Bowler and Large (2008) suggest that design research holds potential benefits when adopted by librarians and state, “The strength of design research lies in its ability to define [the] a problem from a user’s point of view, thus providing designers with authentic definitions of the problem” (p. 43).

Research Questions

The following research questions were used to guide this study.

1. What is the difference between Education EdD students' and Educational Leadership EdD students' information literacy scores, as measured by the B-TILED assessment?
2. What are Education EdD students' and Educational Leadership EdD students' B-TILED scores based on the following variables: a) field in which master's degree was earned, b) number of years since master's degree was earned?
3. What is the difference between Education EdD students' and Educational Leadership EdD students' content area scores, as measured by the B-TILED assessment?
4. In what ways does the qualitative data help to explain doctoral students' information practices as well as the perspectives of doctoral students, program faculty, and academic librarians related to the utilization of library services and library instruction in programs?
5. In what ways does the integrated data explain factors that influence the utilization of library services and library instruction in the doctoral programs?

Conceptual Framework

This study uses the Educational Design Research model as described by McKenney and Reeves (2012) and includes the steps outlined in the analysis and exploration phase and the design and construction phase. The analysis and exploration phase completed in this study included a literature review and the collection of quantitative and qualitative data to investigate factors that influence how library services and library instruction are utilized in the Education EdD program and the Educational EdD Leadership program at the University of Central Florida. The design and construction phase included an analysis of the integrated data collected in the

study and the description of an asynchronous online learning resource that could potentially be used as a library research exercise (Sandoval, 2014). A sequential mixed methods approach was used to collect quantitative data from Education EdD and Educational Leadership EdD students using the B-TILED assessment. Follow up audio recorded interviews were also conducted with Educational Leadership EdD students. To gather additional qualitative data for analysis, audio recorded interviews were also conducted with Education EdD and Educational Leadership EdD program faculty who teach required courses in the programs and with academic librarians who provide or have provided library research support for the programs or other doctoral programs.

Bolman and Deal's four frame model (2008) was also used as conceptual framework to discuss the study findings. The model outlines leadership roles and the structure and functions of organizations, how human resources are addressed in organizational settings, the interactions as well as tensions among groups within organizations, and the values or meanings individuals attach to organizational policies as well as the organization itself. Each frame described in the model provides a lens or perspective that can be useful in considering organizational problems, organizational learning, and issues associated with organizational change (Bolman & Deal, 2008).

Population and Sample

The population in this study included three groups. The first group included doctoral students enrolled in their second year of the Education EdD program and doctoral students enrolled in their second year of the Educational Leadership EdD program at the University of Central Florida (UCF). The second group included program faculty who teach required courses in the Education EdD program or the Educational Leadership EdD program at UCF. The third

group included academic librarians who provide or have provided library research support and instructional services for students enrolled in the Education EdD program and/or the Educational Leadership EdD program as well as support for students enrolled in other doctoral programs at UCF. According to McKenney and Reeves (2012), design research often includes different groups that may consist of experts, teachers, learners, and other educational professionals. Participants in this study were selected using purposive sampling, which was based on the participants' background and experience related to the research setting and the fact that participants could provide desired information to answer the research questions (Creswell & Plano Clark, 2011; Fitzpatrick, Sanders, & Worthen, 2011).

Unit of Analysis

The unit of analysis in this study is the organization. According to Yin (2009), there can be confusion about the level of inquiry that is being carried out in a research study, which is caused by collecting data from individual sources when the actual unit of analysis is broader and might be an organization, community, or social group.

Significance of Study

This research has the potential to contribute to theory related to library services for doctoral students enrolled in education programs as well as practice related to potential solutions for planning distinct library services and library instruction. The B-TILED scores collected in this study serve as indicators of doctoral students' information literacy competencies related to the use of education-specific resources and may be useful in addressing knowledge gaps. The perspectives of doctoral students, program faculty, and academic librarians associated with the

information practices and library research skills of doctoral students also provide initial insights that can be used to inform customized support and library services. Descriptions of factors that influence how library services are utilized and integrated within the two programs can also offer potential insights to inform how library services might be differentiated.

Assumptions

Underpinning this study are two assumptions. The first is that information literacy (or library research) concepts are considered highly relevant to doctoral students due to the research requirements associated with coursework and the competencies needed to effectively work with information sources to conduct library research for literature reviews. The second is that gaining an understanding of effective library research skills and information practices will promote doctoral students academic success, inform their future practice, and support lifelong learning.

Scope

In 2006, UCF adopted *Information Fluency* as a broad campus-wide initiative for their Southern Association for Colleges and Schools Commission on Colleges (SACS) reaccreditation (Beile, 2007). As outlined by the university, information fluency includes three components: critical thinking, computer literacy, and information literacy. In the scope of this study discussions are limited to elements that relate only to information literacy.

Additionally, a new *Framework for Information Literacy for Higher Education* (ACRL, 2014) is currently being considered; however, the new framework is not included as part of this

study. Standards, discussions, and references described in this study refer to the existing ACRL Information Literacy Competency Standards for Higher Education published in 2000.

The working definition proposed in the new *Framework for Information Literacy for Higher Education* (ACRL, 2014) states:

Information literacy is a repertoire of understandings, practices, and dispositions focused on flexible engagement with the information ecosystem, underpinned by critical self-reflection. The repertoire involves finding, evaluating, interpreting, managing, and using information to answer questions and develop new ones; and creating new knowledge through ethical participation in communities of learning, scholarship, and practice (Gibson & Jacobson, 2014, p. 2).

Operational Definitions

As described in this dissertation, the following list of definitions is provided.

Education design research: is a type of research in which the iterative development of solutions to practical and complex education problems provides the content for empirical investigation, which yields theoretical understanding that can inform the work of others (McKenney & Reeves, 2012).

Infolit Modules: are online instructional resources developed as part of UCFs university-wide Information Fluency initiative; modules were co-developed by teams that included UCF librarians and faculty and staff from the Center for Distributed Learning.

Information fluency: has been described as the nexus of information literacy, computer literacy, and critical thinking (Rettig & Hagen, 2003).

Information literacy: is a set of abilities requiring individuals to recognize when information is needed as well as the ability to locate, evaluate, and use needed information effectively (ACRL, 2000).

Information technology: relates to the use of computers, computer systems, or software.

Library instruction: includes face-to-face or online instruction provided by librarians, as well as instruction provided to students in research consultations.

Library research: refers to a collection of critical thinking and procedural skills needed to effectively identify, evaluate, manage, and use information from a range of sources.

Library services: refers to specific library services that include reference and research assistance provided either at the library's research desk or via online assistance provided by the Ask A Librarian service.

Organizational learning: is an integral component of the *change* literature and is defined as a generative process to improve the capacity of participants in an organization to create personal mastery, mental models, shared vision, team learning, and systems thinking (Senge, 2006).

Scholarly communication: a system through which research and scholarly writing is created, evaluated for quality, disseminated to the scholarly community, and preserved for future use (ACRL, 2006).

CHAPTER TWO: LITERATURE REVIEW

Introduction

This chapter presents the literature in three broad areas and discusses sources that focus on: 1) the evolution of library services and library instruction, 2) library services and library instruction in doctoral and master's programs, 3) graduate students' information practices, and 4) organizational learning theories related to higher education and Bolman and Deal's (2008) four frame model. The chapter begins with an overview of the procedures the author used to gather and select sources for this review. The chapter then provides an introduction to the professional standards and guidelines related to the instructional role of academic librarians. An overview is then provided about UCF library services related to doctoral students enrolled in education. Next, an overview of the progression of library instruction services is provided. Then, the chapter provides a review of selected sources found in the Library and Information Science literature and the Education literature that includes library services related to broader graduate programs and also doctoral programs. The next section describes students that have also used the B-TILED assessment as it related to graduate level students. In the final section, sources that present an overview of organizational learning are provided.

Purpose of Study

The purpose of this design research study was to explore the organizational factors that influence how library services and library instruction are utilized in two doctoral programs in education at the University of Central Florida (UCF). To answer this overarching research

question, a sequential mixed methods approach was used to collect quantitative and qualitative data.

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McKenney and Reeves (2012) note that it is common in design research to use overarching research questions and then to distinguish sets of research questions based on the design micro-cycles or phases that are completed in a study. The authors also note that design research includes a dual focus on contributing to theory as well as envisioning practical solutions to instructional problems.

Educational design research is also referred to as design-based research (Kelly, 2003), development research (van den Akker, 1999), design experiments (Brown, 1992; Collins, 1992), and formative research (Newman, 1990; Walker, 1992). Bowler and Large (2008) suggest that design research holds potential benefits when adopted by librarians and state, “The strength of design research lies in its ability to define [the] a problem from a user’s point of view, thus providing designers with authentic definitions of the problem” (p. 43).

Overview of Procedures

To develop this review, I consulted Feak & Swales (2009) guidelines and examples that focus on writing literature reviews. I also consulted Boote & Beile (2005) who provide a literature review rubric and criteria to guide authors in analyzing and synthesizing literature review sources. The goal of this chapter is to situate this study within the context of the literature selected and to provide an analysis and synthesis of the sources. Decisions about the inclusion and exclusion of sources were based on identifying: a) high-quality, scholarly sources, b) sources that represented a variety of viewpoints, and c) the currency versus historical perspective that are provided by individual sources.

To identify sources, various strategies were used that included consulting with scholars to identify authors, books, handbooks, and high-quality, peer-reviewed journals. After examining key sources, I reviewed citations to locate additional sources that included, but were not limited to articles found in the following journals: Educational Researcher, Internet and Higher Education, Innovative Higher Education, International Journal of Journal of Research & Methods in Education, College and Research Libraries, Journal of Academic Librarianship, and portal: Libraries and the Academy. I also searched subject databases to locate review and research articles. Databases that were consulted included, but were not limited to Ebsco's ERIC, Education Full Text; Library, Information Science & Technology Abstracts; and Library Literature Full Text and Professional Development Collection. I also conducted searches using Proquest's Dissertation & Theses database, the UCF library catalog, and Google Scholar. To search academic databases, I used a combination of keyword and descriptor terms that included, but were not limited to: collaboration, curriculum integration, doctoral pedagogy, doctoral students, education, educational researchers, faculty advisors, graduate students, higher

education, information literacy, library instruction, library research, organizational learning, and user education.

Academic Librarian Professional Standards and Guidelines

There are several standards and guidelines provided by professional organizations that address the instructional role of academic librarians and relate to issues addressed in this study. The standards shape the current thinking about how academic librarians plan, deliver, and support outreach for library services and instructional programming. ACRL standards that address the instructional role of academic librarians include: Guidelines for Instruction Programs in Academic Libraries (ACRL, 2011), Standards for Distance Learning Library Services (ACRL, 2008), Standards for Libraries in Higher Education (ACRL, 2011), and Standards for Proficiencies for Instruction Librarians and Coordinators (ACRL, 2007). The existing ACRL Information Literacy Competency Standards for Higher Education (2000) provide a basis on which many library instruction programs are designed and they serve as a bridge to the current Information Literacy Standards for Teacher Education (ACRL, 2011). The proposed addition of the Framework for Information Literacy for Higher Education (ACRL, 2014) will potentially update the current ACRL Information Literacy Competency Standards for Higher Education (2000). One focus of the proposed framework (ACRL, 2014) addresses collaborative efforts between academic librarians and academic programs to promote student understanding of knowledge creation and scholarship. At this writing, it remains to be decided about how or to what extent changes will be made to the existing ACRL standards (2000).

Professional organizations that have adopted the existing ACRL standards (2000) include the American Association of School Librarians and the Association for Educational

Communications and Technology (AASL & AECT, 1998), the International Society for Technology in Education (ISTE, 2008), and the National Council for Accreditation of Teacher Education (NCATE, 2008). Additionally, the Association of American Colleges and Universities (AACU) adopted the information literacy competencies as part of the Valid Assessment of Learning in Undergraduate Education (VALUE) project, which includes a set of educational rubrics developed between 2007-2009 (AACU, 2013). International organizations that have also adopted the ACRL standards (2000) include the Society of College, National, and University Libraries (SCONUL, 1999) and the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2005).

Library Services for Doctoral Students in Education

In 2006, UCF adopted a campus-wide Information Fluency initiative as part of the university's Quality Enhancement Plan (QEP) for reaccreditation by the Southern Association for Colleges and Schools (SACS) Commission on Colleges (Beile, 2007). The university describes information fluency, as defined by Rettig and Hagen (2003), who state that it is the nexus of information literacy, computer literacy, and critical thinking. Information fluency has also been described by the Association of Colleges of the South (2006) as an outcome for critical thinking skills when combined with information literacy and computing skills. As part of the university's Information Fluency initiative, four UCF programs that included: the College of Nursing, the Burnett Honors College, the Philosophy Department, and the Strategies for Success program were selected to support the critical thinking as well as the technology components of the Information Fluency initiative. Working in collaboration with academic programs, the UCF Libraries provided support for the information literacy component. At the time, several faculty

members at UCF's College of Education and Human Performance (CEHP) adopted information literacy concepts in course-related assignments and participated in scheduled library instruction sessions (Beile, 2011). Since 2006, UCF subject librarians have also collaborated with many program faculty in other academic programs across campus to provide support and outreach and to promote the integration of information literacy concepts. As part of the Information Fluency initiative, the Infolit Modules project was also developed, which was a collaborative project implemented by the UCF Libraries and the UCF Center for Distributed Learning (CDL). In 2011, UCF Librarians and CDL staff partnered again to develop the Introduction to Library Research Strategies course, which is provided in Canvas, the university's learning management system. The course was developed for students enrolled in English Composition II courses and Strategies for Success courses. Content developed for these online projects has primarily focused on instruction based on the ACRL standards (2000) and information literacy concepts for undergraduate students; however, some Infolit Modules' include content that may also be useful for graduate courses.

In this study, UCF library services for doctoral students enrolled in education programs are described within the scope of the instruction services offered by academic librarians located at the John C. Hitt Library (main campus library). The subject librarian assigned to CEHP programs provides library instruction, research consultations and outreach services to doctoral students. Library instruction services typically include to face-to-face instruction, online research guides, and other research materials developed by the subject librarian in conjunction with CEHP courses. Research consultations include individualized research assistance that focus on discipline-specific resources related to doctoral students' research. Doctoral students enrolled in education programs can also take advantage of services provided at the Research & Information

Desk and services offered online by the Ask A Librarian department. Additionally, Interlibrary Loan services are provided for all doctoral students and include Document Delivery and UBorrow. The library also supports on site spaces such as a graduate presentation room and graduate study rooms. The Curriculum Materials Center (CMC), which is located in the CEHP, also provides support for students enrolled in education programs at all levels.

UCF subject librarians are members of either the Research and Information Services department or the Information Literacy and Outreach department. Currently the John C. Hitt Library has 14 subject librarians with 12 subject librarians located on the main campus. All subject librarians are assigned to colleges and/or programs to provide outreach and subject-related assistance associated with services and collections (Arthur & Tierney, 2013).

Most subject librarians also prepare and maintain a number of online resources provided for student use and program faculty use. Online materials can be accessed through the library website and include: research guides, Infolit Modules, or short video tutorials. Some subject librarians also present graduate workshops each semester, which are offered in collaboration with the UCF College of Graduate Studies. The one-hour, drop-in sessions cover topics such as author rights and publishing, citation metrics, citation management tools, data management practices, literature review research strategies, and presentation skills. Some subject librarians also provide outreach that focuses on services for specific user groups that include graduate and undergraduate populations. As described in the literature, typical duties performed by academic subject librarians involve outreach to faculty and students that includes instruction and research services, scholarly communication services, and assistance with collections that focus on discipline expertise (Dupuis, 2009; Kitchner, 2009; Silver, 2014; Williams, 2009).

Progression of Library Instruction

Library Instruction Background

In the evolution of reference services (now most often referred to as research and information services) and the progression of library instruction (also referred to as information literacy instruction) in academic libraries, an early aim was to provide basic skills instruction about library use. Grassian and Kaplowitz (2009) describe the historical connections between reference and general library services noting that the growth of *instruction librarianship* was a natural function of providing reference services. Since the late 1960's and early 1970's, librarians have promoted user education and the value of teaching library research skills and instructional services that focus on user needs, which remains a central focus of the duties that many subject librarians currently perform.

Adoption of the ACRL Information Literacy Competencies Standards for Higher Education (2000) (see Appendix D) ushered in the transition to *instruction librarianship* with a focus on teaching and assessing information literacy skills. In many cases the transition involved librarians moving away from primarily teaching students how to use research tools to instruction that centered on concepts related to information practices and critical thinking skills related to identifying, evaluating, and ethically using information sources. With the release of the ACRL standards (2000) many academic libraries also began to develop more long-range goals for their library instruction programs that focused on integrating information literacy within the academic curricula. Ideally, the focus on instructional goals also moved libraries toward more integrated and sequenced information literacy instruction within programs, but as may be expected the approaches adopted by individual libraries was varied and naturally reflected different

organizational structures and preferences for customizing library services (Ariew, 2014; Grassian & Kaplowitz, 2009).

Library Instruction Models

The ACRL Information Literacy Competency Standards for Higher Education (2000) now serve as a basis for many academic library instruction programs. Since their release, hundreds of academic librarians have applied the standards and their related outcomes in direct instruction and through the development of various instructional materials presented in a range of formats. As a result of the ongoing efforts to promote information literacy across the curriculum, several library instruction models emerged. Curzon (2004) identified nine models ranging from introductory and on-demand models to integrated models that are used primarily in general education or first-year experience programs and courses at the undergraduate level. Models ranged from multi-session face-to-face library instruction, information literacy courses, course-integrated information library instruction, as well as instruction integrating information literacy assessments and rubrics (Beile, 2011; Oakleaf, 2010; Rempel, 2010). Online instruction models also evolved as librarians developed standalone tutorials and modules and provided content in learning management systems to support online courses (Bishop, Yonekura, & Moskal, 2013). Some models also include semester-long information literacy courses that offer for-credit or non-credit options while others provide supplemental instructional materials that program faculty could use on an optional basis (Badke 2008).

Curriculum integrated library instruction models have been implemented in teacher education programs, first-year experience programs, writing across the curriculum programs, and distance learning programs. Rockman (2004) gives several examples of integrated approaches,

and also outlines four characteristics of successful programs. Characteristics include the recognition by campus leaders that information literacy is a learning issue and not a library issue, strong partnerships between programs and the library, library instruction that is built on program learning outcomes and assessment, and library instruction that is institutionalized across the curriculum. Lampert (2007) also suggests that the most successful approaches for integrating information literacy concepts often includes models where librarians spend considerable time learning about the curricular landscape at their institutions. Much of the earlier library literature related to curriculum integrated information literacy focuses on undergraduate students. A growing literature base has developed on discipline-integrated approaches that suggest they offer several potential benefits for students. Discipline-integrated models offer the potential for developing a shared focus among stakeholders outside the library, and library research topics can also be more clearly defined and shaped by discipline norms (Beile O'Neil, 2005; Brasley, 2008; Elmborg, 2003; Grafstein, 2002; Klebansky & Fraser, 2013).

Barriers to Library Instruction

Despite the fact that information literacy has been a prominent theme in academic libraries for over 20 years and has been an element in accreditation initiatives, many academic library instruction programs still struggle to move beyond single one-shot sessions or ad hoc approaches to integration. This may be due in part to a lack of effective communication about the intent of the initiatives, the prevalence of library-centric approaches to promote information literacy, or the absence of a common language that resonates with administrators and program faculty. Additionally, in some cases, there has also been debate about who should teach information literacy and whether or not information literacy has an adequate theory base (Badke,

2014; Gee & Breivik, 2002; Cowan, 2014; Grafstein, 2002; Snavely & Cooper, 1997). In consideration of the current focus on expanded outreach in academic libraries, subject librarians will need to find ways to address these issues and negotiate effective ways to align library services and instruction within the academic programs they support.

Course Integrated Library Instruction and Services

At the graduate level, the integration of library services and instruction is often less developed than at the undergraduate level. Frequently, librarians are left to rely on anecdotal evidence and speculate about the appropriate levels of support needed by graduate programs and students. Moreover, much of the research reported in the Library and Information Science literature fails to address effective approaches to support the needs of graduate students or the expectations of graduate students in specific disciplines (Gibbs, Boettcher, Hollingsworth, & Slania, 2012).

Approaches for planning integrated library instruction were found in Beile's (2011) content analysis research and Saunders' (2012) mixed methods study. Each of these studies investigated undergraduate programs; however, they were selected since they describe useful practices for exploring integrated library instruction. Additionally, Beile's article (2011) directly relates to the research setting investigated in this study in which content analysis was used to examine course syllabi in teacher education courses at UCF. The purpose of the study was to examine the extent of library instruction integration, the types of library research skills required in course assignments, and whether library research skills were progressively sequenced in course assignments. In an analysis of course syllabi from 15 undergraduate courses that included a total of 143 assignments, Beile (2011) found that 27% (33 course assignments) required library

research skills. After coding assignments based on required skills, Beile (2011) also created a coding scheme to rank assignment skills that used basic to intensive skill levels. The findings indicated library research skills were appropriately sequenced in core courses, assignments included increasingly complex library research skills, and that library instruction provided the types of skills needed by students to complete course assignments.

Saunders' (2012) mixed methods study takes a broader approach to library instruction integration. The study included an online survey and phone interviews that explored faculty perspectives about information literacy and how information literacy was addressed within the curricula. The study included a nationwide sample of faculty who represented six disciplines however, education was not covered in the sample (Anthropology, Biology, English Literature, Psychology, Political Science, Technology, and Other, which allowed participants to enter an open-ended responses). Saunders' (2012) used a random sample and data was collected from faculty at 50 colleges and universities offering undergraduate majors in each of the disciplines represented. Faculty participants taught at institutions in each of the six regional accreditation areas in the United States and in each Carnegie classification area. Saunders (2012) reported that across disciplines faculty strongly believed information literacy competencies were important for their students and many faculty also indicated they teach information literacy concepts in their courses. Saunders (2012) also found a correlation between faculty members' familiarity with information literacy standards and faculty who provide information literacy training in courses. In addition, although most faculty members believed students needed information literacy instruction; there was less agreement about how it should be addressed within the curriculum.

Graduate Seminars and Workshops

In addition to individual library research support and instruction provided by subject librarians, several libraries are now offering graduate seminars and workshops for masters and doctoral students that cover research topics and strategies. In a longitudinal study, Rempel (2010) investigated the impact of a library workshop offered at Oregon State University Libraries. The workshop was open to students working on empirical research projects although no differentiation was made between masters and doctoral level students. Participants included eight master's students and two doctoral students enrolled in programs in the College of Science, College of Health and Human Services, College of Forestry and the College of Liberal Arts. Interviews were used over three academic terms (2008-2009) to gain insights about the evolving practices used by graduate students' to conduct literature reviews. In her content analysis, Rempel (2010) identified four categories associated with the literature review process: acquiring, organizing, reading, and writing. She also noted that the literature review topic resonated with students and suggests this as a point of need where librarians could offer support that is valued by graduate students. Rempel (2010) also reported that the workshops were most effective early in the students' academic enrollment and especially when students were new to the library. Other findings from the study suggest that students needed help defining the scope of their research, identifying key articles, and setting boundaries for the coverage of their research topics.

Alvarez, Bonnet, and Kahn (2014) also reported on a graduate workshop developed at the University of Michigan that focuses on academic publishing and related topics. During 2012-2013, the authors, who are also librarians, began offering the workshop and a supplemental online toolkit to address graduate students' questions related to publishing activities. Working in

collaboration with university faculty from various departments on campus, the series is ongoing and addresses evolving practices relating to scholarly communication.

Information Practices of Graduate Students

Examining practices for integrating library instruction at the graduate level calls into focus the information practices of graduate students and how students use library resources to conduct research, especially in relation to conducting literature reviews. Unquestionably, doctoral students who are enrolled in education programs bring a high-level of expertise to their coursework. Many doctoral students may have acquired research skills through previous graduate coursework, while completing master's programs, or through professional experiences. Yet, factors such as how familiar students are with a specific university or college library, their comfort-level using online research tools, thesis and non-thesis requirements related to the master's degree earned, and the number of years since they earned their master's degree may all influence students' information practices and readiness to conduct library research.

Additionally, it is often assumed graduate students already know how to work with the literature in their field to conduct library research or that they will be able to learn on their own. These assumptions may be tied to the fact that technology is so prevalent in society and there is an assumption that students have developed effective practices. Contrary to these assumptions students often demonstrate a fragmented understanding about how to effectively work with academic sources or how to select and manage sources. Some authors have suggested that even students enrolled in advanced programs may not be fully prepared to apply effective information practices related to identifying and selecting high-quality sources (Beile, 2007; Boote & Beile, 2005; Combs, Bustamante, and Onwuegbuzie, 2010; Granello, 2001; Johnsrud & Banaria, 2004).

Golde also suggests that students often lack a grounded understanding of discipline concepts as part of critical practice and states, “The problem may be that many students are not asked to work with literature in the ways that professional researchers do before confronting the dissertation prospectus itself” (2007, p. 344). Shulman (2005) also underscores the importance of building expertise to support habits of mind in graduate education. In his description of *signature pedagogies*, Shulman (2005) notes they impart knowledge and know-how that are critical to practice and part of disciplinary norms and states, “They [signature pedagogies] implicitly define what counts as knowledge in a field and how things become known” (Shulman, 2005, p. 54). Whether or not the term information literacy or library research is used to describe effective practices for working with the academic literature, acquiring these skills reflects an essential knowledge that contributes to habits of a discipline and discipline-specific expertise. This is especially true in relation to reviewing the literature as a fundamental requirement of doctoral coursework, and as Boote and Beile (2005) note, “A substantive, thorough, sophisticated literature review is a pre-condition for doing substantive, thorough, sophisticated research” (p.3).

To prepare students to work with the literature and conduct literature reviews, some doctoral programs include course-integrated instruction to provide students with opportunities to review research and analyze characteristics of effective literature reviews. Boote (2012) describes several practices that are included in the UCF Education EdD program to aid students in becoming grounded in the literature. Research skills instruction is also sequenced in the program to guide students to critically analyze and evaluate research. The expectations about the purposes of the literature review and strategies for analyzing the literature are also addressed with students. Additionally, characteristics of effective literature reviews are discussed by introducing literature review rubrics (Boote & Beile, 2005) and students are encouraged to

investigate resources that discuss effective literature reviews practices by authors such as Hart (1998) and Cooper (1988). The use of graphic organizers are also encouraged to help students visualize relationships between topic concepts and to provide additional ways of identifying relationships that may be conceptually opaque (Novak, 2010).

In a discussion of the rise of faculty-librarian partnerships related to course integrated library instruction for graduate students, Blummer's (2009) review of the literature between 2000-2008 discusses the efforts of librarians to identify the best approaches. Integrating library training in graduate programs has included collaborating with instructors who teach research methods courses, integrating ACRL standards into core courses, collaborating with faculty members who teach at satellite campuses, planning graduate training events with other campus departments, and developing asynchronous and distance learning projects.

Authors writing in the Library and Information Science literature also emphasize the importance of helping graduate students understand the connections between information literacy and scholarly communication. They note that information literacy competencies do not represent the full spectrum of skills needed by graduate students. They suggest that instruction for graduate students should also include discussions of the research cycle, author rights, scholarly publishing, copyright, and intellectual property to make concepts more explicit when students work with the literature (Buehler & Zald, 2013; Davis-Kahl, 2013).

Exner (2014) compares the information needs of researchers and *synthesizers* and uses the term synthesizers to refer to individuals who are not conducting original research. Her discussion also outlines ways that information literacy concepts might be operationalized for doctoral students as researchers and describes strategies librarians can use to adapt information literacy standards (ACRL, 2000) to enhance the cognitive complexity of learning. A key point

made in the article is that as librarians address outreach for doctoral and master's students, it is essential that they recognize the fundamental differences in the processes of inquiry that are used by original researchers. The also article underscores the importance of aligning *researchers* information needs to appropriate cognitive levels associated with course requirements.

Doctoral Programs in Education

Grant and Berg (2003) describe the integration of ACRL standards (2000) in courses offered for a joint doctorate in the Educational Technology and Literacy program at San Diego State University and the University of San Diego. Their study looked at three key areas of concern to many subject librarians. The questions focused on how library instruction integration took place, which competencies were addressed in courses, and indications that the competencies were being emphasized. Findings suggested that students were participating in activities related to all five ACRL standards (2000) and each standard was sufficiently covered. Through student focus groups, the researchers were also able to gather examples on how ACRL standards (2000) were taught within courses and applied through student projects such as a problem based project that involved gathering and analysis of information.

Green's (2006) case study, reports on an information literacy course developed for a Doctorate of Educational Leadership program at Shenandoah University in which an information literacy component was matched with each of the program's three core courses that were taught over three semesters. Information literacy components were provided through sequenced instruction and supported the literature review process and preparation of research proposals. The library components were provided online, and the content was developed using the communities of practice model (Lave & Wenger, 1991; Wenger, 1998) to support social

participation in learning. Green notes the relevance of including information literacy within courses to provide building blocks to integrate concepts with the practices of graduate students.

Green and Macauley (2007) also investigated the experiences of doctoral candidates who were enrolled in education programs in America and Australia to compare pedagogies and information literacy training. The authors conducted semi-structured phone interviews with six participants that included doctoral students (one American/one Australian), academic librarians (one American/one Australian), and doctoral advisors (one American/one Australian). The authors also examined learner-centered approaches used to teach information literacy content and reported on similarities in the strategies used by doctoral students that included seeking advice from supervisors and using citation tracking strategies. Noting that doctoral students' benefit from advanced information literacy training, the authors state, "The most valuable forms of teaching and learning employed techniques generated from the learner's perspectives, with an awareness of the learners' contexts, needs, and relations to information" (p. 328).

Doctoral and Master's Programs in Education

In a study conducted by Boote and Beile (2002) the authors investigated library instruction learning environments and students' self-efficacy related to library skills to provide insights about the effects of different learning modalities. Instruction formats compared face-to-face instruction, face-to-face instruction and a web tutorial, and a web tutorial that was used in conjunction with a web-based course. The participants included 49 graduate students enrolled in three research methods courses in education programs at UCF. Findings indicated that both web-based and face-to-face instruction support student learning equally well. Findings also suggested

that web-based tutorials seem to offer a feasible alternative to face-to-face library instruction and students' library skills and efficacy beliefs improved regardless of the instruction format used.

Beile (2003) also assessed the effectiveness of a single, course-integrated library instruction and repeated library instruction to compare student learning. Participants included masters and doctoral level students enrolled in education programs at UCF. The findings suggest that students' scores improved using both types of course-integrated instruction; however, Beile notes that scores were slightly higher on average for those students who had previously attended a course-integrated library instruction session versus students who had not received repeated library instruction.

In a pilot study conducted by Earp (2008) the author gathered data related to the information preferences of master's and doctoral students enrolled in the Department of Educational Foundations and Special Services programs at Kent State. A questionnaire with both closed-ended and open-ended questions was used and students were asked about their research strategies and source preferences. Findings indicated that the three most important sources of information for doctoral students were non-education research databases, education research databases, and library catalogs. Over half of the students also reported using citation tracking strategies to locate articles. Other findings reported by Earp (2008) noted that doctoral students were more likely to seek help from program faculty and graduate students rarely consulted librarians for assistance.

In a small pilot study conducted by Blummer, Watulak, and Kenton (2012) the authors investigated the information seeking behavior, attitudes, and research habits of master's and doctoral students using an online survey and interviews. Participants included 13 master's students enrolled in education programs and 4 doctoral students enrolled in an EdD program.

Results from the web survey indicated that most participants (14 out of 17) were concerned about selecting authoritative sources and the reputation of journals was an important consideration in deciding whether to use a journal. The web survey results also indicated most participants (71%) were uncertain about how to search or where to start their search even though they had previously participated in library instruction.

Online Doctoral and Master's Programs in Education

Brahme and Walters (2010) investigated the differences in the research practices of distance and residential doctoral students at Pepperdine University's Graduate School of Education and Psychology. Their investigation related to how doctoral students enrolled in distance education programs seek assistance, their preferred resources, and the barriers they experienced in using library resources. Participants included 20 students who had recently completed or were completing their dissertation literature reviews. Participants were enrolled in either the residential doctoral program (EdD) in Organizational Leadership or in one of two distance doctoral programs that included an EdD in Educational Technology and an EdD in Organizational Change. Using a qualitative case study design and a convenience sample, interviews were conducted with participants either by phone or online. The authors reported "Eighty-five percent of the participants interviewed sought out peers and librarians for support and assistance with research in the dissertation process" (p. 489). Additionally, all of the distance students (10 participants) expressed the importance of access to a librarian and 70% (N=20) of the residential students also indicated a reliance on librarians.

In research conducted by Tunon and Ramirez (2010) at Nova Southeastern University library, the authors described their investigation of the support provided to a large contingent

(821) of ethnically diverse students who were enrolled in the Education EdD. The study addressed support for students taking courses fully online and the fact that many students (37% or 1,565) had already completed their coursework and were writing their dissertations. Previous library instruction options had provided a number of on and off-campus sessions with librarians; however, many students (~1000) had stopped working on their dissertations after being enrolled for a number of years. To address these issues, librarians collaborated with program faculty to develop a four-part series that included sequenced workshops presented online, regionally, and abroad. The authors reported anecdotal findings that students who attended the multi-sessions workshops in 2008-2009 found the workshops beneficial, and the authors had plans to conduct phone interviews to collect feedback from 2010 participants.

To investigate the existing information literacy skills and library research anxiety of doctoral students enrolled in two online programs in education at the University of Florida, Kumar, Ochoa, and Edwards (2012) conducted a needs assessment with 34 incoming doctoral students. Their pilot survey was based on the self-reported experiences of two groups of doctoral students enrolled in online programs in teacher education and educational technology. The authors highlight two implications from their pilot survey. The first related to the importance of assessing students' library research skills and anxiety to more effectively plan instruction and support students. The second related to structuring library support for students enrolled in online programs. Each of these implications highlight the varying skills of incoming doctoral students related to their familiarity with digital resources at a given institution, their comfort level of using online resources, and the prior experience of students. Other authors have also investigated

the implications of library anxiety and students' feelings related to their ability to conduct library research (Gremmels, 2015; Gross & Latham, 2007; Mellon, 1986; Onwuegbuzie, 1997).

Kumar and Ochoa (2012) also investigated a program-integrated information literacy project with doctoral students enrolled in an online educational technology doctoral program at the University of Florida. Based on the authors' evaluation, their recommendations included the use of needs assessment, support that includes both synchronous and asynchronous options by librarians, and consideration of the placement of resources and support within courses to enhance their relevance to students.

Doctoral and Master's Programs in Other Social Science Areas

In a two-part study Fleming-May and Yuro (2009) investigated the information practices of doctoral students using three focus groups conducted with students. The authors also conducted a web survey distributed to librarians to learn about the specialized services offered at other libraries for doctoral students, and the authors also evaluated the familiarity of librarians with the process of doctoral study. Focus group participants included 24 PhD students enrolled in various social science programs at a large public university in 2006-2007. Findings from the focus groups indicated that students were reluctant to ask librarians for assistance. Participants also expressed preferences for specific types of library services that they thought would be useful; however, in some cases the participants were unaware that the services already existed. Fleming-May and Yuro (2009) noted that students were also concerned with the relevance of library instruction sessions and expressed reluctance about investing time to attend sessions that may be directed toward master's level students. Findings from the web survey conducted with academic librarians garnered responses from 148 librarians, and several librarians (82.6%)

reported they were not familiar with doctoral education procedures at their institutions and more than half of the librarians (69%) also reported they were unfamiliar with doctoral procedures in general.

Green's (2009) investigation of the literature review process as experienced by American and Australian doctoral students calls into question the assumptions related to using the terms information literate in describing the skills of doctoral students. The author's premise is that using the terms may create a false dichotomy where students are either literate or illiterate. The author also suggests that describing learners as being deficient in skills stems from previous studies related to undergraduate students and the tendency to view instructional approaches similarly for both undergraduate and graduate students. As Green points out, in fact, doctoral students bring a wealth of professional experience and life experience to their information practices. As such, librarians must be cautious about the meanings they convey.

Catalano (2013) reviewed 48 studies that covered 1997 through 2013 relating to graduate students' information use and behaviors (25 studies used surveys and 19 used interviews as the primary methodology). Several of the studies reviewed by Catalano were located through her meta-analysis and are also reviewed in this section.

Research Using the B-TILED Assessment

Cannon Dissertation

Cannon (2007) used the B-TILED assessment (Beile O'Neil, 2005) in his dissertation research, which included modifications to the original demographic questions to fit the purpose of his study. The study investigated differences between the information literacy scores of two

groups of teacher education students as well as students' readiness to integrate information literacy into their teaching. The research included a convenience sample of (n=126) graduate teacher education students enrolled in general education programs (64%) and special education programs (37%) at two private universities in northern California. Cannon (2007) investigated several aspects related to the students' information literacy scores and also used the *Readiness to Integrate the Knowledge of Information Literacy into Teaching Survey*, which is an instrument he designed. One area investigated by Cannon (2007) that most closely relates to this study included a comparison of students' overall B-TILED scores. Using an independent samples *t* test, Cannon (2007) found no significant difference between the scores of the two groups surveyed. His study applied the established B-TILED cut score of 57.5% that is recommended by Beile O'Neil (2005) to determine the information literacy competency of participants. Cannon's findings indicated only 46% of graduate students scored at or above the minimum score competency.

Magliaro Dissertation

Magliaro (2010) also used the B-TILED assessment (Beile O'Neil, 2005) in her dissertation research, which included modifications to several content questions. The focus of Magliaro's research was to investigate graduate students' information literacy needs and their personal perceptions and acceptance of specific technologies. The modified B-TILED questions reflected content that specifically focused on the graduate departments represented in her study as well as modifications that reflected content related to the research setting, which was in Canada. The modified B-TILED survey was distributed to 201 graduate students enrolled in education, social studies, and humanities programs at a Canadian university. Magliaro used the

Technology Acceptance Model (TAM) and Affordance Theory frameworks to guide her study, and she also applied the B-TILED 57.5% cut score to determine participants' information literacy competence. In addition to reporting demographic, academic, and departmental variables for students, Magliaro also compared graduate students' scores in her study with the scores reported by Beile O'Neil (2005) that included undergraduate pre-service students.

Calhoun Dissertation

Calhoun (2012) investigated an information literacy instructional method to examine the efficacy of an audio book module used to instruct undergraduate and graduate level nursing students. The multimedia presentation used modular worked-out examples and pre and posttests were administered using modified versions of the B-TILED assessment (Beile O'Neil, 2005). Using a convenience sample, the assessments were administered to 38 students enrolled in the Doctor of Nursing Program and 80 students enrolled in the Bachelor of Nursing program at a mid-sized, private college in the western United States. Two findings reported by Calhoun (2012) suggest that the use of modular worked-out examples to teach information literacy skills may aid students to breakdown ill-defined problems and that multimedia instruction to teach information literacy skills may be enhanced by the addition of student interactions. The latter finding is consistent with the opinions of authors in the fields of instructional technology as well as distance education (Garrison & Akyol, 2009; Herrington & Oliver, 2000; Keller, 1999) who emphasize the importance of interactivity in computer-based or online learning settings.

Organizational Learning

Sources in this section relate to organizational learning and organizational factors

associated with outreach by academic librarians to aligned library services with academic programs. Bolman and Deal's four frame model (2008) is based on organizational theory and social science research and addresses organizations as complex systems. Topics relate to how organizations function, how human resources are addressed within organizational settings, the interactions as well as tensions among groups within organizations, and the values or meanings individuals attach to organizational policies as well as the organization itself. Similar conceptual frameworks that also relate to framing change within complex organizations include systems thinking (Senge, 2006), organizational learning as reflected in the work of Argyris and Schon (1978), and cognitive maps (Weick, 1976).

As described by Argyris & Schon (1978), organizational learning involves modifying one's images or map of an organization or system to bring about change. Organizational learning is an integral component in organizational theory. Senge (2006) describes organizational learning as a generative process that improves the capacity of organizational participants to create. Senge (2006) describes five essential elements that work together to support learning, which include: 1) personal mastery, 2) mental models, 3) shared vision, 4) team learning, and 5) systems thinking. Senge (2006) also suggests that organizational learning in the context of learning teams enable the insights gained by teams to be put into action to establish standards for learning together as part of the larger organization. Yukl (2009) also suggests that organizational learning involves collective learning by members of an organization and supports the processes for the discovery of relevant new knowledge, the diffusion of knowledge to individuals who need it, and the application of the new knowledge to improve internal processes and external adoption.

Since the release of the ACRL standards in 2000 considerable progress has been made in moving information literacy initiatives forward; however, information literacy outcomes have

not been fully articulated for graduate students (Buehler & Zald, 2013). In a discussion of the evolution of information literacy initiatives, Cowan (2014) cautions librarians against placing too much emphasis on library centric solutions at the expense of investigating and matching library programs to institutional practices and academic programs. As academic librarians plan expanded outreach efforts and attempt to align library services with academic programs for graduate groups, it is important that we examine the broader focus of how library programming is planned going forward. Planning that focuses on gaining insights about the needs and concerns of students and programs present the best options to increase the likelihood that library services and programs will be adopted and sustained.

CHAPTER THREE: METHODOLOGY

Purpose of Study

The purpose of this design research study was to explore the organizational factors that influence how library services and library instruction are utilized in two doctoral programs in education at the University of Central Florida (UCF). To answer this overarching research question, a sequential mixed methods approach was used to collect quantitative and qualitative data.

Study Design

This study uses the Educational Design Research model that is described by McKenney and Reeves (2012), which is referred to as design research in this study. In their generic model, which is informed by the fields of instructional design and curriculum development, McKenney and Reeves (2012) describe three main phases: the analysis and exploration phase, the design and construction phase, and the evaluation and reflection phase. In this study, the analysis and exploration phase and the design and construction phase were completed.

McKenney and Reeves (2012) note that it is common in design research to use overarching research questions and then to distinguish sets of research questions based on the design micro-cycles or phases that are completed in a study. The authors also note that design research includes a dual focus on contributing to theory as well as envisioning practical solutions to instructional problems. Bowler and Large (2008) suggest that design research holds potential benefits when adopted by librarians and state, “The strength of design research lies in its ability

to define [the] a problem from a user's point of view, thus providing designers with authentic definitions of the problem" (p. 43).

Research Questions

The following research questions were used to guide this study.

1. What is the difference between Education EdD students' and Educational Leadership EdD students' information literacy scores, as measured by the B-TILED assessment?
2. What are Education EdD students' and Educational Leadership EdD students' B-TILED scores based on the following variables: a) field in which master's degree was earned, b) number of years since master's degree was earned?
3. What is the difference between Education EdD students' and Educational Leadership EdD students' content area scores, as measured by the B-TILED assessment?
4. In what ways does the qualitative data help to explain doctoral students' information practices as well as the perspectives of doctoral students, program faculty, and academic librarians related to the utilization of library services and library instruction in programs?
5. In what ways does the integrated data explain factors that influence the utilization of library services and library instruction in the doctoral programs?

Sequential Mixed Methods Approach

To answer the overarching research question addressed in this study, a sequential mixed methods approach was used to collect quantitative and qualitative data. In this study, the analysis and exploration phase and the design and construction phase were completed. Quantitative and qualitative data were collected in the analysis and exploration phase. The study findings were

then integrated and analyzed in the design and construction phase and the description of an asynchronous online learning resource was created using elements outlined by Sandoval (2014) in his conjecture map model. The asynchronous online learning resource could potentially be used to support graduate level library research. Sandoval (2014) states, “Conjecture mapping is an effort to reify specific conjectures and how they are expected to function in interaction to promote learning” (p. 20). Based on the findings of this study, Bolman and Deal’s four frame model (2008) was also used to discuss the organizational factors that may influence how library services and instruction are utilized in the doctoral programs and the factors related to outreach by librarians for implementing change processes. To plan the sequential mixed methods approach used in this study, recommendations outlined by Creswell (2009) were followed to: 1) determine whether a sequential mixed methods approach was appropriate based on the research questions, 2) identify a rationale or justification for using a mixed methods approach to collect data, 3) develop or identify quantitative and qualitative questions and/or instruments, 4) identify procedures for sample selection, 5) identify data collection procedures, 6) develop analysis procedures to interpret data, and 7) provide a visual model to illustrate the research strategies implemented.

Figure 1 provides a visual model of the research strategies implemented in this study and the steps completed during the exploration and analysis phase and the design and construction phase (McKenney & Reeves, 2012).

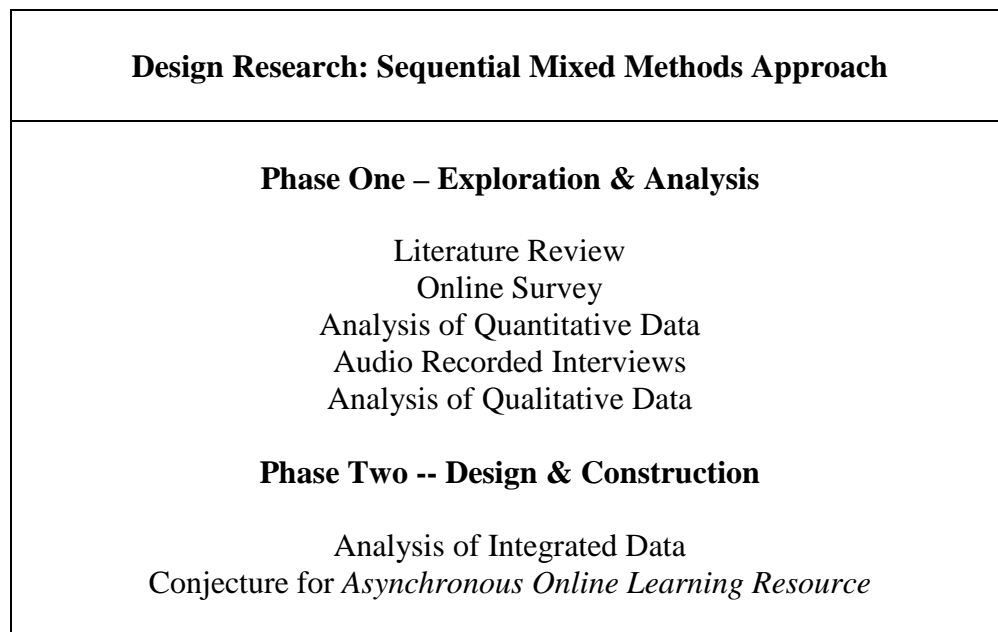


Figure 1: Sequential Mixed Methods Approach

Rationale of the Study

According to Creswell and Plano Clark (2011), a sequential mixed methods approach includes the collection and analysis of quantitative data obtained from a sample and follow up that is conducted with participants to provide more details that help to explain the quantitative results in more depth. The authors also note that the emphasis on data collection may favor either the quantitative or qualitative data.

One rationale for collecting both quantitative and qualitative data is that it aids in addressing the inherently complex problems found in social science research, and the combined approach of data collection and analysis provides a broader understanding of research problems (Creswell, 2009). Other reasons to combine data collection methods include the triangulation of data for mutual corroboration of findings, to draw on the strengths as well as offset the weaknesses of individual methods, to provide a more complete account of an area of inquiry, and to help explain findings generated by individual methods (Bryman, 2006).

Recommendations for implementing a mixed methods approach also involve providing justifications for selecting the design. Creswell and Plano Clark (2011) describe six justifications that warrant the use of a mixed methods approach that include instances when: 1) a single data source may be insufficient, 2) an explanation is needed for results, 3) there is a need to generalize exploratory findings, 4) a second method enhances the primary method, 5) a theoretical stance is needed, or 6) an overall research objective can be better addressed using multiple phases. Justifications for using a mixed methods approach in this study were based on the logic that a single data source would be insufficient to understand the organizational factors that influence how library services and library instruction are utilized in the Education EdD and the Educational Leadership EdD programs. Combining quantitative and qualitative methods allowed for a more complete interpretation of the overarching research question, and the use of both methods also offsets the limitations of using an individual method alone (Creswell, 2009). Quantitative methods provided a process to examine doctoral students' information literacy scores and to identify indicators related to doctoral students' library research skills. Qualitative methods provided a process to gain in-depth information about the meanings that different

groups of participants assigned to library research and the utilization of library services and library instruction.

A final consideration when using a mixed methods approach relates to decisions an author makes about how the strands are addressed in the study. According to Creswell and Plano Clark (2011), “The decisions are: a) the level of interaction between strands, b) the relative priority of the strands, c) the timing of the strands, and d) the procedures for mixing the strands” (p. 64). In this study, quantitative data was collected and analyzed and qualitative data was also collected to inform the overall interpretation of the data and the findings. The qualitative data strand was given priority in this study since this data was critical to gaining an understanding of the needs of doctoral students related to library research as well as gaining an understanding of the perspectives, experiences, and the meanings assigned by participants to the issues explored in the research setting (McKenney & Reeves, 2012).

Setting of the Study

This study took place at the University of Central Florida (UCF) during the spring and fall semesters of 2014. The university is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) and ranked by the Carnegie Foundation for the Advancement of Teaching as an institution with very high research activity (2010). UCF is the second largest university in the United States and the largest in the State University System of Florida, based on 2014 enrollments. As reported by the university’s Institutional Knowledge Management website (UCF, 2014a) fall 2014 enrollment totaled 52,532 undergraduate students, 7,858 graduate students, and 420 medical students. The university has 12 colleges and offers 92 Bachelor’s degrees, 83 Master’s degrees, three Specialist degrees, 31 doctoral (PhD and EdD)

degrees, and a Professional degree in Medicine (UCF, 2014a). Graduate enrollment for fall 2014 by gender was 3329 males and 4529 females, and the average age of graduate students was 30.8 years. The fall 2014 diversity profile of students by ethnicity was 55% white, 22% Hispanic/Latino, 11% Black/African American, 5% Asian, 3% Multi-racial, and 2% Non-resident Alien, and 2% unspecified. The university service area covers 11 counties that include Brevard, Citrus, Flagler, Lake, Levy, Marion, Orange, Osceola, Seminole, Sumter, and Volusia (UCF, 2014a).

The university's College of Education and Human Performance (CEHP) is accredited by the National Council for Accreditation of Teacher Education (NCATE) (UCF, CEHP, 2014a). The college offers 12 undergraduate degrees, 25 graduate degrees, and three doctorate degrees in Education including the Doctor of Education (EdD), Educational Leadership, Executive (EdD), Educational Leadership, Higher Education (EdD), a multi-track PhD, and the Educational Specialist (EdS) professional degree (UCF, CEHP, n.d.). The fall 2014 enrollment for the college totaled 5,620 students, which included 3,815 undergraduate students, 1,805 graduate students enrolled in masters, doctoral, and specialist programs, and 118 non degree-seeking students (UCF, 2014b). The Doctor of Education EdD is a professional practice doctorate designed for students who wish to teach in college or university settings or for those who wish to lead school improvement initiatives (UCF, CEHP, 2011). The Educational Leadership, Executive EdD prepares educational scholar-leaders who practice in areas related to leading in the operation of schools and other educational organizations (UCF CEHP, 2014b). Each of the education doctorate programs offers a unique curriculum from which students can choose based upon their specific focus.

Study Population

The population for this study included three groups. The first group included doctoral students enrolled in their second year of the Education EdD program at UCF (n=25) and doctoral students enrolled in their second year of the Educational Leadership EdD program at UCF (n=21). The second group included CEHP program faculty who teach required courses in the Education EdD program or the Educational Leadership EdD program at UCF. The third group included UCF academic librarians who regularly provide or have provided library research services and instruction for students enrolled in the Education EdD program and/or the Educational Leadership EdD program or who have experience providing research support for students enrolled in other doctoral programs at UCF.

Instrumentation

The *Beile Test for Information Literacy in Education* (B-TILED), developed by Beile O'Neil for her dissertation (2005), was the only quantitative instrument used in this study. The B-TILED is a validated information literacy assessment designed to assess education-specific information literacy skills for undergraduate students enrolled in teacher-education programs. Copyright permission to use the B-TILED in this study was granted by Beile O'Neil (see Appendix B). The original B-TILED assessment consists of 22 content items that are multiple-choice questions as well as 13 demographic and self-percept items. In the development of the B-TILED, Beile O'Neil (2005) selected specific ACRL information literacy objectives and aligned them with the NETS•T Standards (2000) to develop four content areas that include: A) identifying, evaluating, and selecting finding tools, B) demonstrating knowledge of general search strategies, C) evaluating and selecting sources, and D) demonstrating knowledge of legal

and ethical practices. The NETS•T Standards (2000) included in the B-TILED have been updated since the development of the B-TILED and are now listed as ISTE Standards•T.

Beile O'Neil (2005) reported the overall evidence supported the validity claims of the B-TILED assessment. In the validation procedures conducted for the B-TILED assessment, a total of 172 undergraduate teacher education students completed the assessment, which was administered in both electronic and print formats (Beile O'Neil, 2005). Following recommendations found in the assessment literature, Beile O'Neil (2005) included five to six test items in each content area, which was based on the range of skills associated with the objectives and the level of importance of the skills being measured by items. Beile O'Neil (2005) reported the Kuder-Richardson (K-R 20) formula for item-subscale correlations was used to calculate internal consistency for the B-TILED, and the K-R 20 coefficient was .675 for the assessment. Beile O'Neil (2005) notes that this formula is similar to Cronbach Alpha, and explains that:

The Kuder-Richardson 20 (K-R 20) formula is used to compare dichotomously scored data with continuous data, and is analogous to the alpha statistic, which is used to calculate internal consistency values of scales when compared variables are continuous. As test items were either correctly or incorrectly answered, responses were dichotomously scored and were submitted to the K-R 20 calculation for item- subscale correlations (Beile O'Neil, 2005, p. 83).

The B-TILED assessment has also been used in previous doctoral research to assess the information literacy skills of doctoral students as well as undergraduate students enrolled in education programs and students enrolled in other social science programs (Calhoun, 2012; Cannon, 2007; Magliaro, 2010). The use of the B-TILED in each of these dissertations involved assigning the B-TILED cut score (57.5%) to identify information literacy competencies for

participants. The B-TILED cut score infers that an individual has either attained competency or not (Beile O'Neil, 2005). In this study, cut scores are discussed; however, a single passing score was not the focus. In this study, the author was also interested in identifying content area scores and questions level scores to identify the questions that received the lowest number of correct responses. As such, in addition to reporting doctoral students' overall B-TILED scores and content areas scores, question level scores were also examined to identify questions that received the lowest number of correct responses as a formative approach to inform potential areas of future instruction (Dunaway & Orblych, 2011; Popham, 2011).

In the online survey used in this study, the author included the original 22 content questions used in the B-TILED assessment but removed the 13 demographic and self-percept items included in the original B-TILED. The author replaced these items with four demographic questions. A total of 26 questions were included in the survey used in this study, which was distributed as the EdD Survey and the EdD Leadership Survey with each of the surveys including identical questions. The four demographic questions that were added by the author asked students the following information: a) the field in which they earned their master's degree or other advanced degrees, b) the number of years since they earned their master's degree, c) the doctoral program in which they were enrolled, and d) the student's gender (see Appendix C).

Quantitative Data Collection

Description of Quantitative Sample

The target population for the online survey distributed in this study was students enrolled in their second year of the Education EdD program and students enrolled in their second year of

the Educational Leadership EdD, Executive Track program at UCF. The total student enrollment for the Education EdD program was 25 and total student enrollment for the Educational Leadership EdD program was 21. A total of 17 Education EdD and Educational Leadership EdD students completed the online survey, which included a purposive sample of eight Education EdD students and nine Educational Leadership EdD students (N=46).

Quantitative Procedures

In the quantitative phase of this study, students enrolled in their second year of the Education EdD program and students enrolled in their second year of the Educational Leadership EdD program at UCF were invited to participate in an online survey. The surveys also included an invitation to participate in a follow up audio recorded interview with the author. After receiving IRB approval, the following steps were used to collect quantitative data for this study.

1. The B-TILED survey was placed in Qualtrics, which includes a secure server.
2. During fall 2014, program coordinators for the Education EdD and the Educational Leadership EdD programs were contacted and agreed to distribute the study survey to doctoral students enrolled in the second year of each of the programs.
3. The author created a series of emails that included an initial email invitation and reminder emails inviting students to participate in the study. The email content and survey distribution process for the invitations used the Tailored Design Method (TDM) in which an initial email invitation is distributed and three to five follow up reminder emails are also sent (Dillman, Smyth, & Christian, 2009). To reduce the non-response rate, the initial email invitation and the follow-up reminders were created to be short and engaging. The TDM guidelines also suggest that researchers:

a) take steps to ensure that emails are not flagged as spam, b) provide clear instructions for accessing surveys, c) use subject lines that are professional and informative, d) carefully and strategically time emails, e) assign participants unique ID numbers, and f) consider sending a token compensation to participants with the invitation. In this study, the program coordinators for each cohort distributed the initial email invitation as well as the two follow up email reminders. An attempt was made by the author to attend classes to personally invite students to participate in the survey; however, due to difficulties in scheduling the survey invitations were distributed via email only. Program coordinators distributed the survey invitations and the follow up reminders using the students' university required emails, which lessened the likelihood that emails would be flagged as spam. Clearly stated subject lines were used when distributing the survey emails, and the author planned the timing of the emails for approximately one week apart. Unique ID numbers were not assigned to survey participants since the author did not have access to doctoral students' email addresses. Although some consideration was given to offering a token compensation to participants, the author ultimately decided not to use this option since it was decided that a stipend might not serve as much to an incentive to busy professionals.

4. An initial email invitation with a link to the online survey was forwarded to each of the program coordinators for distribution to students. Inadvertently, one of the emails with the survey link was sent to all recent graduates in one of the doctoral programs instead of being sent only to students enrolled in the second year of their program. Consequently, the initial email for that program was retracted. Two students who had

- already graduated and who were not included in the study sample completed the online survey before it was retracted; however, these survey responses were removed and were not analyzed as part of the data collected in this study.
5. To prevent any additional students who were not part of the sample from mistakenly completing the online survey, the author created a specific Education EdD survey and an EdD Leadership survey. Both surveys contained identical content. The program coordinator then redistributed the initial email invitation to students enrolled in their second year of the program.
 6. An email reminder was sent approximately one week after the initial survey invitation. The author provided each program coordinator with a second email invitation with the survey link, and these were distributed to Education EdD and EdD Leadership students enrolled in the second year of their programs.
 7. Approximately one week after the first email reminder was sent, a second and final reminder email was sent to students. The author again provided each program coordinator with an email invitation with the survey link; however, one email was distributed including a link to the wrong survey. Consequently, since one of the survey questions asked students to identify the program in which they were enrolled, the author was able to identify the survey response totals by Education EdD and EdD Leadership students using that survey question.
 8. The online survey was closed in Qualtrics after being open approximately three weeks and data were retrieved for each survey. The survey data were downloaded from the server and imported into a Microsoft Excel file and stored on a secure, password-protected computer.

Qualitative Data Collection

Description of Qualitative Sample

Three groups participated in audio recorded interviews that included Educational Leadership EdD students, Education EdD and Educational Leadership EdD program faculty members, and academic librarians. Participants included a purposive sample of four Educational Leadership EdD students. Initially, eight doctoral students self-identified to participate in follow up audio recorded interviews, which included two Education EdD students: one female and one male; and six Educational Leadership EdD students: four females and two males. The author emailed each of the doctoral students who volunteered to schedule audio recorded interviews, but not all of the students responded. Also, one Education EdD student provided an incorrect email address and that email bounced back. Another Education EdD student scheduled an audiotaped interview, but during the interview it was discovered that the student had not completed the online survey, so that interview was excluded from the analysis. A total of five program faculty members participated in audio recorded interviews, which included a purposive sample of three Education EdD faculty and two Educational Leadership EdD faculty. A purposive sample of three academic librarians also participated in audio recorded interviews.

Role of the Researcher and Criteria for Trustworthiness

In the practice of interviewing, it is important to minimize the effects of the interviewer or researcher to provide a framework that permits participants to respond in a way that accurately represents their beliefs related to the interview questions (Patton, 2002; Seidman, 2006). As such, several criteria are recommended related to the role a researcher plays in the interview process as well as criteria related to the trustworthiness of qualitative data. Since researchers play

an integral role in the interview process, their experience, training, and perspectives should be acknowledged in terms of what they bring to the research. Additionally, criteria associated with the trustworthiness of qualitative data relate to issues of: credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985; Patton, 1999; Seidman, 2006).

The author in this study has been a librarian at the university for seven years and is also a doctoral candidate in the Education EdD program at UCF. The author serves as subject librarian to the Interdisciplinary Studies and Women's Studies programs, supports graduate outreach, teaches library instruction, provides research consultations, and served as the primary content developer for the library's Infolit Modules project. As such, the author is familiar with the research setting and has professional relationships with each of the librarians interviewed in the study and with two of the Education EdD program faculty who participated in interviews. The author's professional relationship with participants may have influenced their willingness to volunteer to participate in interviews. As such, to accurately reflect the nature of the interview interactions and the viewpoints of participants, the author made every effort to set aside any preconceived ideas while conducting and analyzing interviews (Kvale & Brinkmann, 2009; Seidman, 2006).

Familiarity with the research setting is also viewed as a factor that contributes to the credibility of qualitative research (Lincoln & Guba, 1985), and as was the case in this study, the author's understanding of the organization and familiarity with the research setting served to contribute to the credibility of the data. Credibility was further addressed through triangulation of the interview sources, which represented both expert and novice viewpoints (Patton, 1999).

Transferability was addressed in this study by providing transparent descriptions of the research process, providing details about the research setting, and providing details about the

participants responses to ensure that the research could be evaluated in terms of conclusions that are drawn about the issues and their relevance to other settings (McKenney & Reeves, 2012; Patton 1999).

To address criteria for dependability, the author worked with an external reviewer. The external reviewer is a faculty member at the CEHP who has taught in the Education EdD program for approximately 15 years and has extensive experience guiding doctoral students in qualitative data analysis. The process of descriptive transcription, as described by Halcomb and Davidson (2006), was used to manage and analyze the interview data. As part of the descriptive transcription process (Halcomb and Davidson, 2006), the external reviewer examined the initial categories and themes that were identified by the author in the preliminary content analysis and provided feedback. Using this feedback, the author eliminated some of the initial themes and topics were created to more accurately represent areas described by participants.

Lastly, confirmability was addressed in this study through the efforts of the author to maintain a focus on learning the meanings that participants held about the interview questions. Confirmability was also addressed through the triangulation of the interview sources, which included participants from three distinct groups.

Qualitative Procedures

Interviewing allows researchers to investigate educational settings to gain an understanding of the participants experiences, dispositions, and beliefs and to better understand issues from a participant's point of view (Kvale & Brinkmann, 2009; Seidman, 2006). The purpose of conducting audio recorded interviews in this study was to gather additional information and details related to the quantitative data collected and to gain insights about the

experiences of the primary participants from each of the three distinct groups related to the utilization of library services and library instruction in the doctoral programs.

Interviews were conducted with all participants using open-ended questions and all interviews were audio recorded. A guided interview approach was used in this study and the author also used prompts to explore issues and to ask participants to clarify meanings. In each interview the author allowed participants to describe their experiences and the meanings they assigned to the questions. The author attempted to build a professional rapport with participants to facilitate an equitable relationship in the interview process. A guided-interview approach typically includes a script to structure the interview and allows researchers to outline topics and issues in advance and then to adapt the wording and sequence of questions based on the responses of participants or in relation to particular issues participants highlight during interviews (Kvale & Brinkmann, 2009; Patton, 2002; Seidman, 2006).

The following steps were used to collect qualitative data for this study:

1. At the end of the online survey that was distributed during fall 2014, doctoral students were invited to volunteer to participate in an audio recorded interview by selecting *yes* to agree to participate and also by providing their Knight's email address. This information was needed because the author did not have access to doctoral students' email addresses and the email address was used to contact participants who volunteered to schedule audio recorded interviews.
2. Audio recorded interview questions used with doctoral students were first piloted with four undergraduate student volunteers who work at one of the campus libraries. Pretesting questions provided an opportunity for the author to gain experience with the practical steps used in the interview process and to reflect on

needed changes to interview questions or interview strategies (Seidman, 2006).

Audio recorded interviews included eight to ten open-ended questions and prompts (see Appendix G).

3. All interviews with doctoral students were held in a classroom at the UCF main campus library. Interviews lasted approximately thirty minutes to one hour.
4. During fall 2014, the author also contacted program faculty in the Education EdD and the Educational Leadership EdD programs and academic librarians via email or in person to invite them to participate in audio recorded interviews.
5. Interview dates and locations were confirmed via email and interviews were scheduled based on the preferences of individual program faculty members and librarians. One program faculty interview was conducted in a classroom at the UCF main campus library and four interviews were conducted in the offices of program faculty. All interviews conducted with academic librarians were held in a classroom at the UCF main campus library.
6. Interviews conducted with program faculty and academic librarians included eight to ten open-ended questions and alternative prompts (see Appendix H and Appendix I). Each interview lasted approximately thirty-five minutes to one hour.
7. To protect the privacy of all participants identifiable information was coded.
8. The author began each interview by providing an introduction and stating the purpose of the study.
9. Due to library-related terminology used in the interview questions and the concern that terms may be unfamiliar to some participants, the terms *information literacy* and *library research* were described in each interview to establish a

shared meaning of the terms. The author also informed participants that additional comments related to any of the questions were welcomed.

10. Each interview began with two to three background or icebreaker questions.

Doctoral students provided information about their professional backgrounds and the field in which they earned their master's degree. Program faculty provided information about their professional experience and the courses they taught in doctoral programs. Academic librarians also provided information about their professional experience and the support they provide or have provided for doctoral level and or other graduate level students.

11. Following the background questions, the main interview questions were asked as well as alternate question prompts that were used to explore responses and to build on issues discussed by participants in their responses (Patton, 2002).

12. The author concluded each interview by summarizing interpretations of the participants' responses and by asking for any clarifications from participants. Each participant was asked to comment on the accuracy of the author's summary and to provide feedback about any needed clarifications. Based on feedback from some interview participants, corrections were made by the author to the field notes to reflect accurate details.

Content Analysis

The process of descriptive transcription, as outlined by Halcomb and Davidson (2006), was used to manage and analyze the interview data. Descriptive transcription is a reflective and iterative process that includes six steps: 1) in the first step, the author makes field notes during

the interview to record their impressions of the interview interaction, 2) soon after the interview the author reviews the field notes to reflect on initial impressions and to note major ideas and concepts discussed by participants, 3) next, the author listens to the audiotape and reviews the content in relation to the field notes and journal notes (memos) to confirm accuracy of the notes, 4) the author then conducts a preliminary content analysis to develop initial themes, 5) after developing a preliminary content analysis, the analysis is then reviewed by an external reviewer to validate the development of themes, and 6) in the final step, the author reviews the preliminary content analysis to confirm and revise themes, if necessary, and to identify examples that illustrate the themes and the perspectives of participants. In this study, some verbatim quotes are also included to illustrate the themes gathered from the participants' perspectives in audiotape interviews. Seidman (2006) suggests that a conventional way to present and analyze interview data is to first organize excerpts into keywords and categories and then to identify connecting threads and patterns between the categories. In this study, open coding was first used to interpret and categorize the interview data (Matthew & Price, 2010), and then axial coding was used to reassemble the data based on the relationships between and within the categories to apply common themes (Wicks, 2010). Eight categories were initially identified from the participants' responses to the open-ended interview questions. The eight categories included: 1) communication, 2) services, 3) student needs, 4) feedback, 5) information practices, 6) what helped most, 7) what distracted most, and 8) library research feedback. Based on these initial categories, axial coding was then used to connect categories, to identify the final themes.

Due to the minimal overlap between the keywords and categories identified in the doctoral student interview data compared to the keywords and categories identified in the program faculty and librarian interview data, the author developed two separate sets of themes

and topics. After conducting the preliminary content analysis, the initial themes were reviewed by an external reviewer to address dependability. Some of the original themes were retained and others were removed and changed to topics based on the number of responses that were received by participants and the relevance of the responses in addressing the research questions.

Table 1 includes descriptions of the final themes that were identified from the qualitative data collected in interviews with Educational Leadership EdD students.

Table 1: Doctoral Student Themes

	S1	S2	S3	S4
Information practices & resources				
ERIC database	x		x	x
LexusNexis, PsycINFO, Gale databases	x	x	x	x
Most often use library resources online		x	x	x
What helped most about library research				
Information provided by program faculty in courses	x	x	x	x
Information provided by librarian/library instruction	x	x	x	x
Prior experience using sources	x	x	x	x

Some Educational Leadership EdD students also identified the following topics, which are included since they reflect related information that was addressed in the interviews.

Educational Leadership EdD Student Topics:

- **Information practices**
 - Begin with an anchor article
 - Use textbook references
- **What detracted most about library research**
 - Concern about using peer-reviewed/non peer reviewed sources
 - Library and online resources can be overwhelming
 - Articles that cannot be downloaded
 - Frustrating search results and number of search results
- **Library research feedback**
 - Knowing about which information is best to use
 - Recommend library orientation for doctoral students
 - Learning to narrow my topic to search

Table 2 provides a description of the final themes that were identified from the qualitative data collected in interviews with program faculty and academic librarians. Topics identified from interviews with program faculty and academic librarians are listed below the Table 2.

Table 2: Program Faculty and Academic Librarian Themes

	F1	F2	F3	F4	F5	L1	L2	L3
Student needs								
High quality/credible sources	x	x	x	x	x			
Empirical, Theoretical, Lit Reviews					x			
Selecting and organizing sources			x	x	x	x		
Multi-disciplinary sources		x				x		
What to do w/sources after search			x	x				
Services								
Library instruction		x	x		x	x	x	x
Infolit Modules		x			x			x
Research guides		x						
Research consultations		x	x	x				
Build relationships						x	x	x
Learn program needs/align services				x		x	x	x
Offer flexible option for programs							x	
Offer more asynchronous options							x	
Graduate workshop sessions				x			x	

Some program faculty and academic librarians also identified the following topics, which are included since they reflect related information that was addressed in the interviews.

Program Faculty and Academic Librarian Topics:

- **Communication**
 - Little/no communication
 - Know about services/refer doctoral students
 - Regularly communicate w/subject librarian
 - Subject librarian does considerable outreach
- **Feedback**
 - Respect for all kinds of literature (academic/professional)
 - Good to have conversation about programs periodically
 - False assumption grad students know how to conduct library research

CHAPTER FOUR: RESULTS

Purpose of Study

The purpose of this design research study was to explore the organizational factors that influence how library services and library instruction are utilized in two doctoral programs in education at the University of Central Florida (UCF). To answer this overarching research question, a sequential mixed methods approach was used to collect quantitative and qualitative data.

Study Design

This study uses the Educational Design Research model that is described by McKenney and Reeves (2012), which is referred to as design research in this study. In their generic model, which is informed by the fields of instructional design and curriculum development, McKenney and Reeves (2012) describe three main phases: the analysis and exploration phase, the design and construction phase, and the evaluation and reflection phase. In this study, the analysis and exploration phase and the design and construction phase were completed.

McKenney and Reeves (2012) note that it is common in design research to use overarching research questions and then to distinguish sets of research questions based on the design micro-cycles or phases that are completed in a study. The authors also note that design research includes a dual focus on contributing to theory as well as envisioning practical solutions to instructional problems. Bowler and Large (2008) suggest that design research holds potential benefits when adopted by librarians and state, “The strength of design research lies in its ability

to define [the] a problem from a user's point of view, thus providing designers with authentic definitions of the problem" (p. 43).

Research Questions

The following research questions were used to guide this study.

1. What is the difference between Education EdD students' and Educational Leadership EdD students' information literacy scores, as measured by the B-TILED assessment?
2. What are Education EdD students' and Educational Leadership EdD students' B-TILED scores based on the following variables: a) field in which master's degree was earned, b) number of years since master's degree was earned?
3. What is the difference between Education EdD students' and Educational Leadership EdD students' content area scores, as measured by the B-TILED assessment?
4. In what ways does the qualitative data help to explain doctoral students' information practices as well as the perspectives of doctoral students, program faculty, and academic librarians related to the utilization of library services and library instruction in programs?
5. In what ways does the integrated data explain factors that influence the utilization of library services and library instruction in the doctoral programs?

Introduction

This chapter reports the results of the datasets collected in this study, an analysis of the data, and how the integrated data were used to describe an asynchronous online learning resource. McKenney and Reeves (2012) state the activities carried out during the analysis and

exploration phase of design research typically include conducting a literature review, identifying a problem, learning about current issues, and identifying what is believed to be the causes of the problem. These activities involve collaborating with stakeholders and other individuals who are knowledgeable about the issues to examine how and why potential problems were addressed, as well as the results. In the design and construction phase, McKenney and Reeves (2012) state that ideas are generated and potential solutions are explored. Activities or outputs from this phase may include mapping out solutions, creating documents to describe potential designs or skeleton designs that embody ideas, or creating design specifications that can be used to construct a prototype. In this study, the results of the analysis and exploration phase involved conducting a literature review and collecting and analyzing the survey and interview data. The results of the design and construction phase involved an analysis of the integrated data, and it also included the description of a conjecture for a *citation tracking learning resource* that applies elements outlined by Sandoval (2014) in his conjecture map model. This asynchronous online learning resource could potentially be used in graduate level library research instruction.

Quantitative Results

Description of Survey Participants

Participants who completed the online survey and the response rates by program are shown in Table 3. This data indicates the number of responses received from Education EdD students was slightly lower than the number of responses received from Educational Leadership EdD students, and the overall response rate for the survey, which was 36.95%.

Table 3: Characteristics of Survey Participants by Program, Gender, & Response Rate

Doctoral Programs	N	Surveys Completed by Gender	Surveys Completed by Program	% Responses
Education EdD Students	7 Males 18 Females	2 Males 6 Females	8	32.0%
Educational Leadership EdD Students	8 Males 13 Females	2 Males 7 Females	9	42.85%
Total	46	4 Male 13 Females	17	36.95%

Research Question 1

What is the difference between Education EdD students' and Educational Leadership EdD students' information literacy scores, as measured by the B-TILED assessment?

The dataset that was used to answer this research question was collected from Questions 1 through 22 in the Education EdD and Educational Leadership EdD Survey (see Appendix C). The mean B-TILED score for students enrolled in the Education EdD program ($M=69.32$, $SD=13.90$) was slightly higher than the mean score for students enrolled in the Educational Leadership EdD program ($M=60.61$, $SD=12.02$). Table 4 indicates the scores for each group as well as the range of scores by program, as measured by B-TILED.

Table 4: Description of B-TILED Scores by Program

Doctoral Programs	n	Mean	Median	SD
Education EdD Students	8	69.32	72.72	13.90
Educational Leadership EdD Students	9	60.61	59.09	12.02

An independent-samples t test was conducted to evaluate the difference between the mean B-TILED scores for students enrolled in the Education EdD program and students enrolled in the Educational Leadership EdD program. A test for normality was conducted and assumption for normality was met ($SW=.948$, $df=17$, $p=.422$). The Levene's Test of Equality of Variance was also conducted ($F=.087$, $p=.772$), which indicated the variance of the mean scores is approximately the same. Therefore, assumption of homogeneity of variances was also met. The t test indicated there was no significant difference between Education EdD students' and Educational Leadership EdD students' information literacy scores, as measured by the B-TILED $t(15)=1.39$, $p=.19$. Additionally, the Campbell Collaboration online effect size calculator (n.d.)

was used to estimate the standardized mean difference, which indicated a medium effect size ($d=0.61$). Guidelines for interpreting Cohen's effect sizes were used, which indicate: .2=small, .5=medium, and .8=large (Fraenkel & Wallen, 2009). This suggests that the non-significant result may be due to the small sample size and due to the effect size calculation that there may be a difference between the groups.

Research Question 2

What are Education EdD students' and Educational Leadership EdD students' B-TILED scores based on the following variables: a) field in which master's degree was earned, b) number of years since master's degree was earned?

Demographic information for survey participants was collected in Questions 23 through 26 in the Education EdD and Educational Leadership EdD Survey. The questions asked students the following information: a) the field in which they earned their master's degree or other advanced degrees, b) the number of years since they earned their master's degree, c) the doctoral program in which they were enrolled, and d) the student's gender.

Characteristics for Education EdD students by the fields in which students' earned their master's degrees, as well as the length of time since each student earned their master's degree are described in Table 5. Over half of the Education EdD participants reported earning their master's degrees seven or more years ago.

Table 5: Education EdD Participants by Degrees and Years Since Master's Earned

Doctoral Programs	Field Master's Degree Earned	Years since Master's Degree
Education EdD Students	Elementary Education	1-3
	Science Education	4-6
	Teacher Leadership	4-6
	Science Education	7-9
	Counseling	10-12
	Elementary Education	10-12
	Fine Arts	16 years
	English Education	19 years

Characteristics of Educational Leadership EdD students by the fields in which students' earned their master's degrees, as well as the length of time since each student earned their master's degree are described in Table 6. Only three Educational Leadership EdD participants reported earning their master's degrees seven or more years ago. One Educational Leadership EdD student reported she had also completed a *Specialist EdD Leadership degree.

Table 6: Educational EdD Leadership Students by Degrees and Years Since Master's Earned

Doctoral Programs	Field Master's Degree Earned	Years since Master's Degree
Educational Leadership EdD Students	Administration and Supervision	1-3
	Science Education	1-3
	M.A.T. Teaching	4-6
	Counselor Education*	4-6
	English Education	4-6
	Reading and Literacy Education	4-6
	Communication Sciences and Disorders	7-9
	Public Administration	7-9
	School Administration and Leadership	10-12

A minimum competency for mastery on the B-TILED was established using a cut score of 57.5% and infers that an individual has either attained competency or not (Beile O’Neil, 2005). The cut score requires correct answers to 13 of the 22 multiple-choice questions. The frequency distribution for doctoral students’ raw scores and the range of scores received by doctoral students in both groups was based on the 22 content items assessed in Questions 1 through 22 in the B-TILED (see Appendix C). Four scores fell below the established cut score (57.5%), and three additional scores were only slightly above the cut score (see Table 7).

Table 7: Frequency Distribution of B-TILED Scores

Score (n17)	Frequency	%
8	1	36*
10	1	45*
11	1	50*
12	1	55*
13	3	59**
14	1	64
15	1	68
16	6	73
17	1	77
20	1	91

*Below cut score **Slightly above cut score

The percentage of Education EdD participants who scored above the established B-TILED cut score was 35% (n=8), and the percentage of Educational Leadership EdD participants who scored above the established B-TILED cut score was 41% (n=9). The percentage of doctoral students scoring above the B-TILED cut score for both groups was 76%.

In relation to the variables: a) field in which master's degree was earned, b) number of years since master's degree was earned, of the four scores (*) that fell below the B-TILED cut score (57.5%), three were received by doctoral students who earned their master's degrees 10 or more years earlier. Three additional scores (**) were only slightly above the B-TILED cut score and were received by doctoral students who earned their master's degree 3 to 9 years earlier. Doctoral students' B-TILED scores as well as their master's degree and the length of time since each student earned their master's degree are described in Table 8.

Table 8: B-TILED scores by Master's Degree and Years Since Master's Earned

Master's Degrees Earned	Years Since Master's	% B-TILED Scores
Administration and Supervision	1-3	63.63
Elementary Education	1-3	72.72
Science Education	1-3	59.09**
M.A.T. Teaching	4-6	59.09**
Counselor Education	4-6	50.0*
English Education	4-6	72.72
Science Education	4-6	90.90
Reading and Literacy Education	4-6	72.72
Teacher Leadership	4-6	72.72
Communication Sciences and Disorders	7-9	72.72
Public Administration	7-9	59.09**
Science Education	7-9	72.72
Counseling	10-12	68.18
Elementary Education	10-12	54.54*
School Administration and Leadership	10-12	36.36*
Fine Arts	16 years	45.45*
English Education	19 years	77.27

In this study, rather than evaluating a single passing score the author was interested in identifying potential content area scores and question level scores that received the lowest number of correct responses. Therefore, in addition to reporting doctoral students' overall B-TILED scores, content area scores for each group as well as question level scores were examined as a formative assessment to identify any potential knowledge gaps where students may benefit from future instruction or review (Popham, 2011).

The B-TILED assesses information literacy competencies in four broad content areas (see Appendix C) that are represented in Questions 1 through 22. Beile O'Neil (2005) developed these content areas by aligning the ISTE NETS*T (2000) Standards with learning objectives identified in the ACRL Information Literacy Competency Standards for Higher Education using standards one, two, three, and five (2000).

The content areas include:

- Content Area A: Identifying, evaluating, and selecting finding tools
- Content Area B: Demonstrating knowledge of general search strategies
- Content Area C: Evaluating and selecting sources
- Content Area D: Demonstrating knowledge of legal and ethical practices

Figure 2 describes doctoral students' raw scores for each of the B-TILED content areas. The difficulty levels among the content areas are also indicated, as described by Beile O'Neil (2005) who notes that there is a wide range of difficulty levels among the four content areas. Educational Leadership EdD students' raw scores were somewhat lower compared to Education EdD students' scores for Content Area A, which relates to content for identifying, evaluating, and selecting finding tools. Additionally, Educational EdD students' raw scores were somewhat lower compared to Education Leadership EdD students' scores for Content Area C, which relates to content for evaluating and selecting sources.

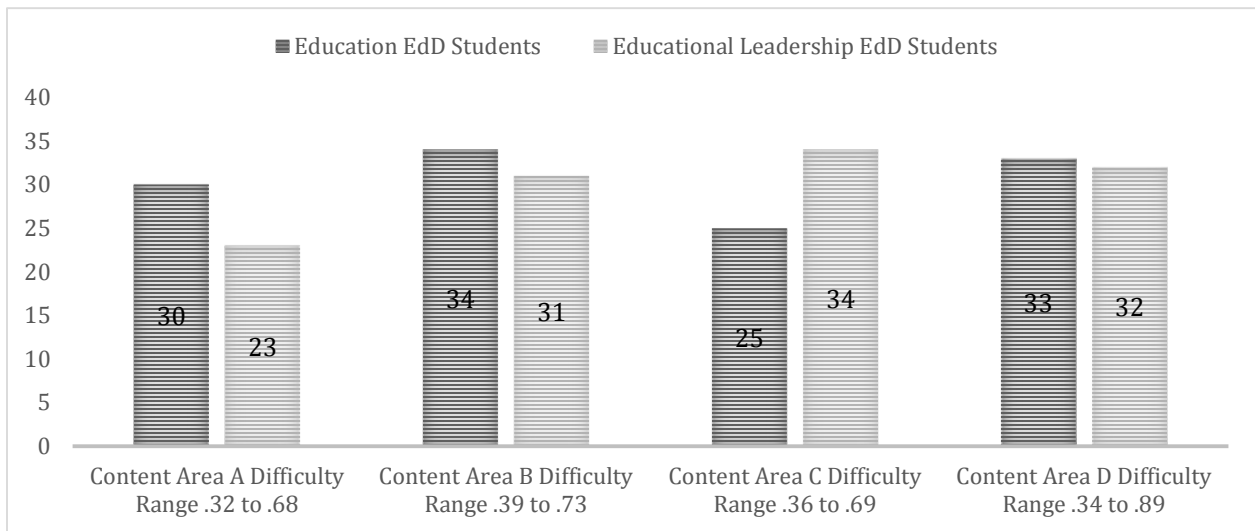


Figure 2: Doctoral Students' Raw Scores by Content Area

Research Question 3

What is the difference between Education EdD students' and Educational Leadership EdD students' content area scores, as measured by the B-TILED assessment?

To evaluate doctoral students' content area scores, a test for normality was conducted, which indicated that the assumption for normality was only met for Content Area B and was not met for Content Areas A, C, and D. The Levene's Test of Equality of Variance was also conducted, which indicated equal variance of the mean scores. Therefore, the assumption of homogeneity of variances was met (see Table 9).

Table 9: Content Area Test for Normality and Test for Homogeneity of Variances

Content Areas	Test for Normality			Test for Homogeneity of Variances	
	<i>SW</i>	<i>df</i>	<i>p</i>	<i>F</i>	<i>p</i>
Content Area A	.825	17	.004	2.094	.168
Content Area B	.936	17	.279	.016	.900
Content Area C	.888	17	.043	1.247	.282
Content Area D	.796	17	.002	3.130	.097

An independent-samples *t* test was conducted to evaluate scores for Content Area B, which indicated no significant difference $t(15)=1.38, p=.19$. This suggests there is no difference between Education EdD students' and Educational Leadership EdD students' scores in relation to skills associated with demonstrating knowledge of general search strategies, as measured by the B-TILED. A consideration in the interpretation of this result should include recognition of the small sample size, which may make the *t* test results less meaningful.

Since the distributions for Content Areas A, C, and D were not normal a Mann Whitney U Test was conducted for these content areas. Table 10 shows the results of the mean scores and the standard deviations for each of the content areas.

There was a significant difference for Content Area A $p=.002$ with the Education EdD group scoring higher. This suggests that there may be a difference between Education EdD students' and Educational Leadership EdD students' scores associated with skills for identifying, evaluating, and selecting finding tools. No significant difference was found for Content Area C, $p=.42$ and Content Area D, $p=.54$.

Table 10: Content Area Means and Standard Deviations by Groups

Content Areas	Education EdD Students		Educational Leadership EdD Students	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Content Area A	3.75	.46	2.56	.73
Content Area B	4.25	1.17	3.44	1.24
Content Area C	3.13	1.55	3.78	.97
Content Area D	4.13	.99	3.56	1.51
Percentage	69.32		60.61	

Table 11 shows the B-TILED questions receiving the lowest number of correct responses by both groups. Questions that received the lowest percentage of correct responses in both groups included Questions 2, 9, and 14. Questions 2 and 14 are included in Content Area A: identifying, evaluating, and selecting finding tools, and Question 9 is included in Content Area B: demonstrating knowledge of general search strategies. The concepts covered in the questions require students to: identify a source that can be used for background information, select relevant synonyms for related search terms, and identify the element in an article citation to locate the journal article at the library.

Table 11: Percentage of Correct Answers by Content Area

% Correct by Questions				
B-TILED Content Items	Content Area	Difficulty Range	Education EdD Students (n=8)	Educational Leadership EdD Students (n=9)
Question 2	A	.32 to .68	38%	33%
Question 9	B	.39 to .73	38%	44%
Question 14	A	.32 to .68	13%	0%

The question that received the lowest overall score was Question 14, which received only one correct response. Question 14 asks students to identify the element in a citation to locate a journal article at the library. Several other questions also received low overall scores from individual groups. Low-scoring questions were identified based on the questions that received 50% or fewer correct responses by students in either group. Questions with the lowest percentage of correct answers for Education EdD students were: Q16 (38%), Q17 (50%), and Q20 (38%). Questions with the lowest percentages of correct answers for Educational Leadership EdD

students were: Q3 (33%), Q4 (25%), Q11 (25%), and Q13 (25%). Questions 3 and 4 are included in Content Area A: identifying, evaluating, and selecting finding tools. Question 11 is included in Content Area B: demonstrating knowledge of general search strategies. Question 13, 16, and 17 are included in Content Area C: evaluating and selecting sources. Question 20 is included in Content Area D: demonstrating knowledge of legal and ethical practices.

Summary of Quantitative Results

In this study, the B-TILED assessment was used to collect doctoral students' information literacy scores. The established cut score for the B-TILED is 57.5% and represents mastery; however, in this study the B-TILED was used as a formative assessment (Maki, 2010; Popham, 2011) to gather data that could be analyzed about doctoral students' skills in relation to library research. The B-TILED is an objective assessment that measures competencies related to education-specific resources. It was designed for use with undergraduate students enrolled in education programs, but it has also been used in other dissertation research with graduate students.

Results for Research Question 1 were inconclusive. The *t*-test indicated a non-significant result in relation to the differences between doctoral groups' B-TILED scores; however, this may be due to the small sample size since an evaluation of the effect size suggests there may be a difference between the groups.

Results for Research Question 2 indicated that 76% of the overall scores were above the B-TILED cut score. The percentage of Education EdD participants who scored above the established B-TILED cut score was 35% (n=8), and the percentage of Educational Leadership EdD participants who scored above the established B-TILED cut score was 41% (n=9). This

suggests doctoral students may benefit from additional review of some content covered by the B-TILED assessment since the assessment was designed for undergraduate education students.

Results for Research Question 2 related to the variables: a) field in which master's degree was earned and b) number of years since master's degree was earned indicated that four scores (*) fell below the B-TILED cut score (57.5%) and three of the scores were received by doctoral students who earned their master's degrees 10 or more years earlier. Three additional scores (**) were only slightly above the B-TILED cut score and were received by doctoral students who earned their master's degree 3 to 9 years earlier.

Results for Research Question 3 show the overall raw scores for each of the B-TILED content areas. These scores indicated that Educational Leadership EdD students' scores were somewhat lower compared to Education EdD students' scores for Content Area A, which relates to identifying, evaluating, and selecting finding tools. Additionally, Educational EdD students' scores were somewhat lower compared to Education Leadership EdD students' scores for Content Area C, which relates to evaluating and selecting sources.

An independent-samples t test was conducted to evaluate scores for Content Area B and no significant difference was found $t(15)=1.38, p=.19$. This suggests that there is no difference between Education EdD students' and Educational Leadership EdD students' scores associated with demonstrating knowledge of general search strategies. Consideration must again be given to the small sample size, which may make the t test results less meaningful.

A Mann Whitney U Test for Content Area A indicated there was a significant difference $p=.002$ between groups with the Education EdD group scoring higher. This suggests there may be differences between Education EdD students and Educational Leadership EdD students in

relation to skills associated with identifying, evaluating, and selecting finding tools. No significant difference was found for Content Area C, $p=.42$ and Content Area D, $p=.54$.

Qualitative Results

Description of Interview Participants

Of the doctoral students who completed audio recorded interviews, the purposive sample included four Educational Leadership EdD students, which consisted of three females and one male (see Table 12).

Table 12: Audio Recorded Interviews Completed by Doctoral Programs

Doctoral Programs	N=	Interview Volunteers	Interview Participants
Education EdD Students	25	2	0
Educational Leadership EdD Students	21	6	3 females 1 male
Total	46	8	4

From the purposive sample of three Education EdD program faculty members and two Educational Leadership EdD program faculty members who completed audio recorded interviews, the average years of program experience was nine years, as shown in Table 13.

Table 13: Audio Recorded Interviews Completed by Program Faculty

Participants	Gender	Program Experience
EdD Faculty 1	Male	3 years
EdD Faculty 2	Male	15 years
EdD Faculty 3	Female	8 years
Educational Leadership EdD Faculty 1	Male	3 years
Educational Leadership EdD Faculty 2	Female	15 years

Three academic librarians completed audio recorded interviews, which consisted of two females and one male. Of the purposive sample, the average years of experience of participants was 15 years. Table 14 includes a description of the participants.

Table 14: Audio Recorded Interviews Completed by Academic Librarians

Participants	Gender	Program Experience
Librarian 1	Female	13 years
Librarian 2	Female	15 years
Librarian 3	Male	16 years

Research Question 4

In what ways does the qualitative data help to explain doctoral students' information practices as well as the perspectives of doctoral students, program faculty, and academic librarians related to the utilization of library services and library instruction in programs?

Results from Interviews with Doctoral Students

Questions used in interviews with doctoral students (see Appendix G) asked participants to describe the practices they used to conduct library research in relation to course assignments and/or conducting literature reviews, how they learned to conduct library research, what they found most helpful and most distracting about library research, and any other insights about their information practices.

Overall doctoral students described their information practices in relation to identifying and gathering sources as well as the resources they used. Doctoral students did not specifically focus on conducting literature reviews, which may be due to the courses they have taken thus far in their program. Some students described strategies they used in relation to library resources such as citation tracking strategies.

All of the doctoral students commented positively about the help they received in their courses from program faculty related to conducting library research as well help with library resources. Doctoral students also commented on the value of the library instruction that was scheduled with the subject librarian. Additionally, three of the four doctoral students also commented that they did not come to campus often and stated they typically used online resources.

S1 described two recent assignments he had completed. One was a reading journal assignment completed during the current semester (fall 2014). The assignment required him to use scholarly articles pertaining to his topic. To complete the assignment he cited journal articles that he found using the ERIC database. He also relied on citations from a textbook. The second assignment the student described was for legal studies in education course (completed the previous semester). For this assignment, he cited legal cases and used scholarly articles. He also reported that he primarily uses ERIC and PsychLit (or PsycInfo) databases depending upon the assignment. In terms of what distracted from library research, S1 expressed concerns about selecting sources that were not peer-reviewed. This concern related to knowing which sources were appropriate to use and dismissing sources because they were not peer reviewed. S1 also commented that he learned a lot by attending the library session as well as a research consultation he had scheduled. He noted that these options helped him to use the databases to find resources more quickly. The final interview question asked students what other questions would be helpful to learn more about their information practices. S1 couldn't think of any additional questions, but he commented that it was important for doctoral students to learn about library resources and to also schedule individualized sessions stating, "I almost feel like without one or the other I would definitely be at a loss right now."

S2 had completed a paper that she submitted the day of the interview, which was a position paper about advocacy and English language learners. She reported that she started her research using online scholarly articles that focused on educational leadership. She also used ERIC, which she noted is usually her main source. S2 stated, "I would say I always start with an anchor article and then I work backwards." She noted that using an anchor article helped her find other research. When asked how she learned to use this strategy, S2 stated she learned to conduct

research in two ways. First, as an English teacher because research was part of what she did in the classroom, and she also learned about research in her master's and doctoral programs. She commented that when she started her doctoral program the professor scheduled a library session for students to learn about the resources and stated, "I was really happy that [omitted] did that because I was not the only one, I think, who did not know that all these resources were available." In answer to what 'helped most' to conduct library research, S2 stated again that it was the library orientation session and the direction she received in her classes. Related to problems or what distracted from conducting library research, S2 noted that it might be the way she was doing research, but sometimes the search results were frustrating. She commented that sometimes when she used an anchor article, the related sources didn't really fit. She also commented on having a problem [one time], when an article was not available to be downloaded. The student was not aware of inter-library loan options. S2 commented, "What I have found and what I learned during the orientation is there are so many different ways to look for information that there are things that I'm probably not thinking of as I'm starting to do my own research."

S3 talked about a recent position paper (completed the previous week) she worked on that required evidence to support her position. She used the National Center for Education Statistics, textbooks, and other books that provided statistics to complete the assignment. When asked how she learned to conduct library research, she commented that she had gotten help when her class came to the library for training but that she was somewhat familiar with how to use the UCF databases. She also reported that she mostly uses online access and does not come to campus very often. In relation to what helped her most to conduct library research, she stated, "I think just learning how to narrow down my topic." In response to what else would help in understanding how she conducted research, S3 suggested asking about the databases she was

familiar with and the specific ones to use for assignments. When prompted, S3 mentioned using the LexisNexis database also.

S4 had completed a paper during the spring semester (2014) for an Educational Law class and described the assignment as an extensive research paper. She reported using mostly online library resources to focus on legal resources to locate and compare statutory language related to her topic. She commented on using ERIC and Lexis Nexis. S4 noted the things that helped her most to conduct library research were the help she received in her courses, the instruction session held at the library, and self-exploration. She stated, “I definitely think that introductory course, or that introductory class that we had where we came here and she [librarian] went through everything for us I think was very, very helpful.” S4 commented that what detracted her most when conducting library research was that using online resources or coming to the library can be overwhelming because there are so many options it is difficult to know where to begin or the best options. S4 thought the introduction to library resources helped her begin to recognize where to look for various sources. Commenting on the B-TILED questions used in the online survey, S4 noted that she did not have to do a thesis in her master’s program since it was portfolio based. S4 stated, “So that already puts me at a different experience level than even people that maybe did write a thesis for their masters.” S4 also stated that especially for students who were entering programs several years after completing a master’s degree – or for those students that are new to the university that conducting library research can be especially difficult and that the introductory library class was very important.

Results from Interviews with Program Faculty and Academic Librarians

Questions used in interviews with program faculty and academic librarians were similar in focus. Questions included in interviews with program faculty (see Appendix H) addressed areas related to communication with the library, utilization of library services, what encourages or discourages program faculty from utilizing library services, and concerns about doctoral students conducting library research for course work or literature reviews. Interview questions addressed with academic librarian had a similar focus but questions included librarians' views about library support and approaches for supporting programs (see Appendix I).

Related to communication with the library, F1 noted he had very little communication with the library and was unfamiliar with services that were offered. He commented that most of the information he acquired came through informal conversations with other program faculty members and students. F3 commented that he regularly communicates with the subject librarian related to scheduling library instruction sessions in conjunction with his research courses. F3 schedules an introductory library session in conjunction with his research courses and when doctoral students' are working on their literature reviews. F3 and F4 noted that they also require doctoral students to schedule research consultations with the subject librarian.

Related to communication, each of the librarians commented on the long-standing relationships between the library and CEHP faculty as well as the support provided to CEHP students at all levels. L2 and L3 noted the subject librarian has provided considerable outreach to CEHP students and programs. L2 also commented on the support provided to the college by the Curriculum Materials Center (CMC) as well as the long history of librarians working with CEHP faculty and students. The context of this comment related to the importance of librarians building valued relationships with program faculty to provide library services. L2 stated, "What I've seen

is, you know the faculty and they know what you do, and they see the value that a librarian can bring to the program.” Additional comments relating to the need for communication between the library and doctoral programs were expressed by F2 and L2 and L3 who noted that faculty who are new to the university, as well as non-tenure track faculty and practioners who teach doctoral courses may be less aware of library services and may less likely to structure their courses to include library resources.

On the topic of utilization of the library services there was unanimous consensus among program faculty about the importance of utilizing library services. F2 commented that, “We all want good quality literature reviews that are grounded in the literature and we know the library is an important place to do that.” F1 also noted, “Library skills can make students better consumers of information, which goes hand in hand with the program goals.”

All program faculty provide library research training within their courses. Two library services regularly utilized by F3 and F4 are library instruction and research consultations, which are provided by the subject librarian, and students in their program are required to schedule research consultations. F2 and F5 do not regularly schedule library instruction and instead teach library research skills as part of their courses. Their students are also referred to schedule research consultations with the subject librarian. F2 introduces doctoral students to the library website, key resources, databases, and the research guides. He stated although he introduces the research guides, he does not find them to be that helpful because they are too general and include too much information. F2 has also used some of the Infolit Modules that are provided by the library, but he did not feel they were very helpful for doctoral students due to the content level. F2 stated, “In terms of the online modules, again it’s that lack of differentiation – the modules are designed by and large for incoming freshman – and a couple of them might be mildly tailored

to more advanced students, but there's a real gulf there." F2 also commented that overall differentiated resources would be more helpful for his students. F5, who has also used the Infolit Modules, commented that her students find some modules more helpful than others. She suggested it would be helpful to have high-quality modules to assign to her students so they had opportunities to practice and get feedback. F5 commented, "I don't want them to just read about the search strategies or whatever, I want them to practice and get some feedback, that would be ideal." F5 also noted it would be helpful to look at which library skills fit best in different parts of the program. L2 pointed out that library services were affected by staffing, which relates to organizational factors that affect both academic programs and the libraries. F4 shared suggestions about communications related to students' needs and research consultations. This comment was in the context of the importance of reinforcing library research concepts with students as part of the steps used in discussing and locating sources in the consultations.

Responses to a question about what might encourage or discourage program faculty from utilizing library services garnered suggestions by both program faculty and librarians that related to the importance of outreach to faculty and especially to new faculty and adjunct faculty. F1 who stated previously that he was less familiar with library services, commented that it would be helpful to know about library services so when he was building his courses he could identify services that he might want to utilize. F1 also noted that time was a factor in learning about services that were available. F1 suggested the library might offer training sessions for faculty.

The interview question about concerns program faculty have related to doctoral students' conducting library research, received several important comments, which consisted of four key areas that were discussed: 1) identifying core sources and high-quality sources, 2) working with multiple literatures related to education topics, 3) differentiating sources that included empirical,

theoretical, and literature review articles, and 4) prioritizing, organizing, and managing sources. In relation to working with multiple literatures, F2 noted doctoral students “Must be able to decompose a complex problem of practice into its constituent literatures and then use effective strategies to identify core pieces of literature in each area.” F5 noted, “Students often do not understand article genres and have difficulty differentiate between empirical, theoretical, and literature review articles.” F3 and F4 commented on the need for doctoral students to be able to analyze and synthesize sources related to working on their literature reviews. F4 also stated, “That some of their biggest issues are not their actual search process but it’s what do I do next.” F4 also commented that students need help with strategies such as sorting and categorizing resources related to their research so they can align sources with their research questions as they conduct their research. F5 also pointed out that students often need help with paraphrasing and citing sources, as well as learning about search strategies. F2 cautioned, “In terms of locating sources it was seldom helpful for doctoral students to rely on open-ended database searches.”

Another area associated with conducting research for literature reviews was mentioned by L1 who commented on the complexity doctoral students encounter when working with cross-disciplinary sources. L1 also commented that doctoral students in education are frequently unfamiliar with search tools other than ERIC. Commenting more generally, L3 noted that it was a false assumption that graduate students already know how to conduct library research. L2 also suggested that graduate students would benefit from learning about other aspects of scholarly communication such as data management practices, publishing, and publishing expectations.

In response to the final interview question, which asked participants what else would help in understanding the issues addressed, three of the five program faculty members shared suggestions about various library services and/or library instruction. F2 stated, “I’m not terribly

thrilled about it [library instruction].” He explained that library instruction often was not differentiated for audience levels and in previous sessions too much emphasis was placed on database searches. F4 stated that, “Really understanding a program I think is important for the services to align with the program intentions.” F4 also shared suggestions about potential workshop ideas related to doctoral students that could potentially address instruction for working with and managing sources. F1 suggested asking faculty why they do not use services.

Data Integration

Research Question 5

In what ways does the integrated data explain factors that influence the utilization of library services and library instruction in the programs?

In this study, the B-TILED was used to gather and analyze scores about doctoral students' library research skills, which are considered to be representative of basic skills needed by doctoral students. In this study, the B-TILED was used as a formative assessment to identify potential baseline indicators about doctoral students' library research skills. Since the use of a single objective test alone cannot adequately reflect an individual's information literacy skills or their ability to conduct library research, qualitative data was also collected and given priority to provide deeper insights for the analysis of the study findings. Additionally, given the limitations of the quantitative results related to Research Question 1 and Research Question 3, which were inconclusive (likely due to the small sample size) the qualitative data provided the strongest evidence in relation to the overarching research question that is addressed in this study.

Interpretations for Research Question 1

The mean scores for doctoral groups indicated Education EdD students ($M=69.32$) scored slightly higher overall than Educational Leadership EdD students ($M=60.61$). The independent samples t test that was conducted to compare the group scores indicated no significant difference, but the effect size calculation indicated a moderate effect ($d=.61$), which may suggest there is a difference between the groups. Interpretations of the scores should be made cautiously and they are interpreted by the author as inconclusive.

1. If there are differences between the groups, potential causes may be due to the type and amount of previous library instruction students received in each group or to the prior professional experience of participants. In responses to the interview questions, all of the Educational Leadership EdD doctoral students commented favorably on the library research assistance they have received in both current and previous UCF courses. Program faculty also reported they provide library research training as part of their courses. Unfortunately, since Education EdD doctoral students did not participate in interviews, no additional information about their prior library research assistance or their professional experience was available.
2. The only additional information about doctoral students' B-TILED scores that is available related to this question is that three of the four doctoral students who participated in interviews stated the B-TILED was representative of what they typically did in relation to their coursework, but of the four doctoral students who participated in interviews, one of the students received the lowest overall score (36%), two students scored only slightly above the B-TILED cut score with both

receiving scores of 59%, and the fourth student received a score of 73%. In interviews with three of the Educational Leadership EdD doctoral students each of the participants described effective library research strategies that are consistent with approaches that are commonly used to gather and identify resources for the types of assignments they described. Responses provided by only one doctoral student seemed to indicate less familiarity with typical library research strategies.

Interpretations for Research Question 2

Overall, the scores that fell below the B-TILED cut score seem to suggest that students who earned their master's degree over 10 years ago may be less prepared to conduct library research. Additional considerations related to the interpretation of data about doctoral students' master's program and the length of time since they completed their master's are discussed below.

1. In interviews conducted with Educational Leadership EdD students, participants were asked how well they thought the B-TILED reflected the types of things they typically did in relation to their coursework. S4 commented that she was unsure if she had enough experience to answer the survey questions since her master's program required a portfolio not a thesis. She stated, "So that already puts me at a different experience level than even people that maybe did write a thesis for their masters."
2. As reflected in the quantitative data, of the four scores that fell below the B-TILED cut score (57.5%), three were received by doctoral students who earned their master's degrees 10 or more years earlier. Additionally, a doctoral student who earned their master's degree 16 or more years earlier received the fourth lowest overall score.

3. Also reflected in the quantitative data, scores were dispersed for the three additional scores that were only slightly above the cut score. Doctoral students who earned their master's degrees 1-3, 4-6, and 7-9 years earlier received the additional three lowest scores.

Interpretation for Content Area A scores

An analysis of the B-TILED scores for doctoral students related to Content Area A: identifying, evaluating, and selecting finding tools, found there was a significant difference $p=.002$ between the groups, with the Education EdD group scoring higher. This suggests a potential difference between Education EdD students' and Educational Leadership EdD students' skills associated with identifying, evaluating, and selecting finding tools.

1. Educational Leadership EdD students Content Area A scores were the lowest overall in this content area (as shown in Figure 2). There was little qualitative data that could provide additional information related to the score since information about identifying, evaluating, and selecting finding tools was not differentiated by the author in the interview questions.
2. The following responses do indicate Educational Leadership EdD students' familiarity with specific library resources as well as comments associated with identifying, evaluating, and selecting finding tools. Doctoral students' indicated in interviews that although they were familiar with some education resources such as the ERIC database and other databases, they were still concerned about identifying and selecting the best sources. In interviews, three of the four students identified using the ERIC database, which is a key Education resource. All four

students also mentioned using other library databases (Lexis Nexis, PsycINFO, and Gale) and other resources, and one doctoral student commented on using various statistical sources.

3. Additional interview data that may be related to Content A area data include: S4 stated that online sources could be overwhelming but that she primarily conducts research from off-campus. S1 expressed concerns about evaluating the appropriateness of non-peer reviewed sources for coursework. Three of the four doctoral students interviewed also reported primarily using online resources.
4. Unfortunately, since Education EdD doctoral students did not participate in interviews, no additional information about their information practices related to this area was available.

Interpretations for Research Question 4

The most significant findings in this study related to the qualitative data gathered about the needs of doctoral students in relation to conducting library research. Program faculty described several areas of concern associated with this area. Doctoral students also described factors that helped them the most and detracted the most when they conduct library research. Additionally, academic librarians provided details about library services and programs and potential directions that can be used to inform library services.

1. Program faculty identified concerns that focused mainly on higher-order skills that related to library research skills. Program faculty addressed areas associated with building content knowledge in the discipline as students work with the academic literature and other information resources. Areas discussed by program faculty

- included: identifying core scores and high-quality sources; working with multiple literatures related to education topics; differentiating sources that included empirical, theoretical, and literature review articles; and prioritizing, organizing, and managing sources.
2. Program faculty provided suggestions about library services that included feedback about library instruction, the Infolit Modules, and the Research Guides. Individual program faculty expressed the need for differentiated sources in research guides, the need for higher-level cognitive skills in instruction and instructional materials, and the need to reinforce what students learn as part of the research consultation process.
 3. Doctoral students comments about what helped most to conduct library research reflected a focus on the helped they have received. Three of the four doctoral students commented again in their response to this question about the library research assistance they received in their courses and in the library orientation. Also, F3 stated, “I think just learning how to narrow down my topic.”
 4. Librarians commented in relation to building relationships with program faculty and communicating with new faculty and adjunct faculty to make them aware of library services. L2 suggested librarians should find out what program faculty need for courses and strive to provide flexible options; that librarians should be involved in broader discussions of the literature beyond discussions of database searches; and that more asynchronous online options could be used for instructional library resources.

Conjecture Mapping

Based on an analysis of the integrated data collected in this study, a conjecture is described that applies elements outlined by Sandoval (2014) in his conjecture map model. Sandoval (2014) describes that conjecture mapping is a method to explain the required elements that make up a conjecture statement, which includes: the specific design or embodiment of the design intervention, the mediating processes, and the expected or desired outcomes.

The conjecture described here is for the *citation tracking learning resource*, which operationalizes graduate level library research skills. Using the findings from interviews conducted with program faculty and academic librarians as well as content related to Question 14 in the B-TILED assessment, which was the question that received the lowest overall score by both groups of doctoral students, elements of the conjecture are outlined. The conjecture represents a flexible, asynchronous online learning resource that can potentially be integrated within a course, depending upon the preferences of program faculty, or used in library research instruction by librarians. It is designed as a practice exercise and a potential intervention to help doctoral students develop effective library research skills associated with the literature review process. The conjecture for the *citation tracking learning resource* describes what it is expected to do, how it is expected to work, and the outcomes it is expected to produce (Sandoval, 2004; Sandoval 2014).

Conjecture: The conjecture represented in the *citation tracking learning resource* is that instruction that includes locating a literature review article, using citation tracking strategies, creating author or article alerts, and using a citation management tool are effective methods to help doctoral students: a) differentiate the purpose of literature review articles, b) recognize relationships between sources in a topic area, and c) demonstrate effective strategies to organize and manage topic-related sources in the process of conducting a literature review (see Figure 3).

Conjecture for Citation Tracking Learning Resource			
Instruction that includes locating a literature review article, using citation tracking strategies, creating author or article alerts, and using a citation management tool are effective methods to help doctoral students: a) differentiate the purpose of literature review articles, b) recognize relationships between sources in a topic area, and c) demonstrate effective strategies for organizing and managing topic-related sources in the process of conducting a literature review.	Tools	Mediating Processes	Outcomes
			ACRL Standard (2000) 2:1b, 2:1d
	Task Structures	Participant Artifacts	The information literate student selects the most appropriate investigative methods or information retrieval systems for accessing needed information.
	Participant Structures		
	Discursive Practices		

Figure 3: Asynchronous Online Learning Resource

According to Sandoval (2014), design conjectures include the embodiment or a specific design and the mediating processes that are described in the following elements.

- Embodiment -- refers to the specific design of the *citation tracking learning resource* and describes the feature of the learning resource include:

- Tools or materials represent resources used in the learning resource (Review of Educational Research online journal, Web of Science database, RefWorks or Mendeley citation management tool).
- Task structures represent the tasks learners are expected to perform (students will perform searches using Review of Educational Research and Web of Science, create alerts, identify related topic resources, setup a citation management tool, import sources into the citation management tool, assign sources to folders, and create custom user fields that can be used to write article annotations).
- The participant structures represent how participants (students and instructors) are expected to participate (use asynchronous online guide, observe demonstrations, and practice by performing learning tasks).
- The discursive practices represent the modes of discourse that are used to present the information (communications with instructors/peers, etc.).
- Mediating Processes -- are the observable interactions or participant artifacts that represent the learners' interactions and learning (students will gather sources and create an annotated bibliography that can potentially be submitted and evaluated).
- Theoretical Conjectures -- include the targeted outcomes produced by the learning resource, which are described in the following components:
 - Outcomes are produced through the mediating processes described above. In this example, Standard 2 of the ACRL Information Literacy Competency Standards for Higher Education (2000) is the basis for the learning outcomes. Standard 2:1 The information literate student selects the most appropriate investigative methods or information retrieval systems for accessing needed information, 2:1b)

investigates the benefits and applicability of various investigative methods, 2:1d)
selects efficient and effective approaches for accessing the information needed
from the investigative method or information retrieval system.

The *citation tracking learning resource* will begin by using the journal, *Review of Educational Research* (or other scholarly publications that provide literature review articles) to identify a specific literature review article, and then demonstrate how citation tracking can be used to locate additional topic-related sources. Citation tracking will be a multi-step process that involves using the cited references in the literature review article as well as articles that have cited the original review since it was published. The exercise will also discuss options to create author and article alerts for a related research topic that uses a library database such as Web of Science and/or Google Scholar. Students will also view brief videos to set up a citation tool account for RefWorks or Mendeley. Students will also import articles, create folders, and create custom some fields to annotate sources using the citation tool. The learning resource will include multi-step demonstrations related to elements of the exercise and also involve the completion of a brief annotated bibliography related to a topic of interest.

McKenney and Reeves (2012) suggest that planning for actual use in relation to design research requires a consideration of the conditions for favorable adoption and seeing change from the perspectives of learners, teachers, and administrators. The conjecture described above, represents one potential option that may be useful to offer a flexible approach to integrate library research skills that are differentiated for doctoral level students enrolled in education programs.

CHAPTER FIVE: DISCUSSION

Summary of Findings

This chapter presents a discussion of the findings from this study, discusses library outreach in the context of organizational learning and the Bolman and Deal framework (2008), and provides recommendations for the library and the academic programs.

Currently, academic libraries are exploring ways to expand programming and services to meet the unique needs of specific graduate groups. In conjunction with this focus, the roles of academic librarians are also expanding in the area of outreach. Librarians are becoming more directly involved in aligning library services and programming with academic programs and promoting change within their institutions. To address challenges associated with outreach and to effectively promote change, it is important that librarians gain deeper insights about the needs and perspectives of programs, program faculty, and graduate groups.

In this study, the collection and analysis of two datasets allowed the author to examine the information literacy scores of doctoral students enrolled in the Education EdD program and the Educational Leadership EdD program as well as data collected in audio recorded interviews conducted with doctoral students, program faculty, and academic librarians. This data provided initial insights about factors that influence how library services are integrated within each of the programs, identified various needs associated with doctoral students conducting library research, helped in gaining a broader understanding of the information practices of doctoral students, and provided valuable insights about the perspectives of program faculty and academic librarians related to library services. Using findings from this study, recommendations are made to inform future planning and potential directions for library outreach and the academic programs.

Purpose of Study

The purpose of this design research study was to explore the organizational factors that influence how library services and library instruction are utilized in two doctoral programs in education at the University of Central Florida (UCF). To answer this overarching research question, a sequential mixed methods approach was used to collect quantitative and qualitative data.

Findings and Implications

This study investigated how library services are utilized in two doctoral programs in education at UCF. In so doing, the author was seeking to identify initial parameters about the expectations of program faculty, the perspectives of doctoral students, program faculty and academic librarians, and insights about the information practices of doctoral students related to library research and library services. Much of the research found in the Library and Information Science literature fails to identify core practices to support the needs of graduate students related to library research or the expectations of graduate faculty (Fleming-May & Yuro, 2009; Gibbs, Boettcher, Hollingsworth, & Slania, 2012). This study offers initial insights to help in addressing this gap in the literature. In the following section, key findings and implications are outlined in relation to each of the research questions that are addressed in this study.

Research Question 1: What is the difference between Education EdD students' and Educational Leadership EdD students' information literacy scores, as measured by the B-TILED assessment?

Finding 1a: The doctoral programs represented in this study illustrate examples of how library research instruction and services can be integrated within doctoral level programs in

education and include two slightly different approaches. In the Education EdD program, library research instruction is provided within courses by program faculty and doctoral students are referred to the library for research consultations and additional resource assistance. In the Educational Leadership EdD program, library research instruction is provided within courses by program faculty and library instruction sessions are also scheduled with the subject librarian in conjunction with research methods courses. Educational Leadership EdD students are also required to schedule individual research consultations with the subject librarian.

Implication 1a: This study identified no conclusive findings to suggest that one method of integrating library instruction and services within the programs was more effective than the other. The findings do suggest that offering flexible options to integrate library instruction and services best aligns with the approaches adopted by program faculty. Each of the examples in this study supports a discipline-integrated approach from the standpoint of including library instruction and services. Discipline-integrated approaches are recommended since they offer such benefits as the potential to develop a shared focus among stakeholders outside of the library and the ability to more clearly define and shape library instruction and services based on discipline norms (Beile O’Neil, 2005; Brasley, 2008; Elmborg, 2003; Grafstein, 2002; Klebansky & Fraser, 2013). Discipline-integration approaches also support the recognition that information literacy is a learning issue and not a library issue. Discipline-integrated approaches can help to build strong partnerships between academic programs and librarians and serve to strengthen library instruction content provided for graduate level students since instruction is built on program learning outcomes and assessments (Rockman, 2004).

Finding 1b: The overall information literacy scores of doctoral students as measured by the B-TILED assessment (Beile O’Neil, 2005) in this study indicated that 35% of Education EdD

students (n=8) and 41% of Educational Leadership EdD students (n=9) scored above the established B-TILED cut score of 57.5%. The cut score requires students to answer 13 of the 22 B-TILED content items correctly.

Implication 1b: Since the B-TILED assessment was developed for undergraduate students enrolled in education programs, findings for the overall scores suggests that doctoral students may not be entering into their coursework with the needed skills to effectively and efficiently work with the literature in their field. Additionally, misconceptions or partial knowledge about effective strategies for working with the academic literature may also limit doctoral students in developing effective strategies. Learning theory and instructional design practices address the importance of building new knowledge based on prior knowledge. Dick, Carey, and Carey (2009) note that learners construct new knowledge by building on their prior understanding, thus it is extremely important to determine the range of doctoral students' prior knowledge. Gredler and Shields (2008) also note that one key in developing future learning and providing instruction is to understand the existing competencies of students. Although each of the doctoral programs supports a discipline-integrated approach by including library instruction and services, the B-TILED scores suggest that additional learning opportunities for doctoral students in relation to library research strategies and concepts would be beneficial.

Findings 1c: The question receiving the lowest overall score on the B-TILED was Question 14, which received only one correct response. Question 14 asks students to identify the element in a citation to locate a journal article at the library.

Implications 1c: Using a citation to locate a journal at the library is an essential skill at the graduate level. It is not clear whether students did not recognize the correct elements in the citation example and/or that they were unaware of the process or options for locating journals

through the library's website. In either case, findings related to Question 14 suggest that doctoral students would benefit from reviews in these areas to better understand the process.

Finding 1d: Other questions that received low overall scores by individual groups were also identified. Low-scoring questions were identified based on questions that received 50% or fewer correct responses from either group. Seven questions were identified that spanned each of the four content areas assessed. During interviews, three of the four doctoral students stated that the B-TILED was representative of what they typically did in relation to their coursework, but of the four students who participated in interviews, one student received the lowest overall score (36%), two students scored only slightly above the B-TILED cut score with both receiving scores of 59%, and the fourth student received a score of 73%.

Implication 1d: Since lower scoring questions were dispersed across the four B-TILED content areas students may benefit from a review of content covered in each of the areas. In relation to lower scoring areas and students' responses to the interview question about the coverage of the B-TILED, the finding suggests that doctoral students may be overestimating their library research skills. Of course, other plausible explanations may be that when answering the interview question students did not accurately recall the specifics of the B-TILED or that students were simply not reflective when answering the interview question.

Research Question 2: What are Education EdD students' and Educational Leadership EdD students' B-TILED scores based on the following variables: a) field in which master's degree was earned, b) number of years since master's degree was earned?

Findings 2a: Doctoral students who earned their master's degree 10-12 years earlier received three of the four lowest overall scores on the B-TILED assessment. A doctoral student who earned their master's degree 16 years earlier also received one of the four lowest overall

scores. In relation to three additional scores that were only slightly above the B-TILED cut score, the scores were dispersed among doctoral students who earned their master's degrees 1-3 years, 4-6 years, and 7-9 years earlier.

Implications 2a: Based on the students who received the lowest overall B-TILED scores, the data suggests there may be a connection between when a student earned their master's degree and their readiness to conduct library research. For students' returning to higher education after longer absences, at minimum, attending a library orientation and also attending some of the graduate workshops could be of considerable benefit in helping students to acclimate to the university library setting and to gain foundational skills related to working with resources as well as learning the options for utilizing resources.

Finding 2b: In an interview comment associated with the fields in which students' earned their master's degrees one student expressed a concern about correctly answering the B-TILED questions. The student's comment was in the context that her master's degree did not have a thesis requirement. The student noted that not completing a thesis might put her at a disadvantage in answering the B-TILED questions. Unfortunately, no clear relationships were identified in this study that connected the overall scores with specific fields in which students earned their master's degrees. This limitation was likely associated with the small sample.

Implication 2b: The concern expressed by the doctoral student about the requirements of her master's degree suggests that some students may experience anxiety related to conducting library research. Library anxiety is a concept that has been investigated in the Library and Information Science literature that relates to students' feelings about their ability to conduct library research (Gremmels, 2015; Gross & Latham, 2007; Mellon, 1986; Onwuegbuzie, 1997). Library anxiety factors investigated by Onwuegbuzie (1997) included: age, gender, and native

language. Mellon (1986) also describes factors associated with library anxiety that relate to the size of the library and expectations that college students already know how to use the library. In relation to students' previous experience and their master's degree program, it is likely that attending a library orientation and library workshops also would help students gain foundational skills related to working with resources and to learn about options for utilizing resources.

Additionally, in relation to students' experience levels and library anxiety students could also be directed to view various library 'how to' videos that briefly describe library services as well as some library research tools. Program faculty and librarians could also provide details to reinforce how students can get help with general informational questions both in the library at the Research & Information Services desk or online through the Ask A Librarian service.

Another practical option that could be pursued to support more direct communication between the library and doctoral students enrolled in the programs is the development of a web portal to provide access to specific resources for doctoral programs. A web portal could be maintained by the library and updated regularly with relevant information about services and resources for doctoral students enrolled in education programs.

Research Question 3: What is the difference between Education EdD students' and Educational Leadership EdD students' content area scores, as measured by the B-TILED assessment?

Finding 3: An analysis for Research Question 3 found no significant differences between the scores for Content Area B: Demonstrating knowledge of general search strategies, Content Area C: Evaluating and selecting sources, or Content Area D: Demonstrating knowledge of legal and ethical practices addressed in the B-TILED. For Content Area A: Identifying, evaluating,

and selecting finding tools, a Mann Whitney U Test did indicate a significant difference $p=.002$ in the group scores with the Education EdD group scoring higher.

Implication 3: Results from an analysis of Content Area A scores suggest there may be a difference between Education EdD students' and Educational Leadership EdD students' skills associated with identifying, evaluating, and selecting finding tools. Results from the overall content area scores also indicated that the Educational Leadership EdD group scored the lowest overall in Content Area A (as shown in Figure 2). Regrettably, the qualitative findings did not provide additional insights about the content area scores since specific follow up questions about finding tools were not asked as part of the interviews. In interviews, doctoral students primarily reported about the strategies they used when conducting library research.

Three of the four interview participants did identify ERIC as an education-specific tool, and all of the doctoral students also commented on other databases and statistical resources they used for specific assignments. Due to the low overall scores received by the Educational Leadership EdD group for Content Area A, it would likely be beneficial to provide a review for students to discuss various types of 'finding tools' and criteria for selecting specific tools. As defined in the ACRL Standards (2000), which were used to develop the B-TILED (Beile O'Neil, 2005) assessment finding tools can include a range of resource formats that include databases, as well as background resources, specialized encyclopedias, handbooks, or books.

Findings related to this research question, also reflect a broader area that may need to be addressed by the programs. This area involves identifying the scope of library research content covered in doctoral programs and how library research content is sequenced within courses. Librarians could potentially collaborate with program faculty to discuss this broader concern. One method that could be beneficial is for program faculty and librarians to collaborate to review

course syllabi and identify how content was sequence and any potential gaps. Library related assignments, assessments and/or rubrics could then be recommended and created by librarians as supplemental exercises for doctoral students.

Research Question 4: In what ways does the qualitative data help to explain doctoral students' information practices as well as the perspectives of doctoral students, program faculty, and academic librarians related to the utilization of library services and library instruction in programs?

The data analysis for this research question provided valuable insights about the perspectives of doctoral students, program faculty, and academic librarians in relation to library services and needs that were identified related to doctoral students conducting library research.

Interviews reflected unanimous consensus among program faculty about the importance of utilizing library services to support doctoral students in developing grounded skills for conducting library research and to develop high-quality literature reviews.

Findings 4a: Interview findings also provided several important insights about the utilization of library services by programs. Disagreements and suggested for improvements to services were reflected for specific library services that included: in-person library instruction, the Infolit Modules, the research guides, and research consultations.

One program faculty member commented that approaches taken for in-person library instruction were not differentiated for graduate level students and that instruction should go beyond rote discussions of database searching. A librarian also noted librarians should focus on broader issues and conversations related to the literature and go beyond discussions of database searches.

Two program faculty members also commented about the usefulness of content provided in the Infolit Modules for graduate level students. In comments related to the Infolit Modules, one program faculty member noted that the modules also lack differentiation and are primarily designed for undergraduate students with only a few of the modules addressing content that is mildly tailored to advanced students. Another program faculty member stated the Infolit Modules were not as helpful as she had hoped for her students and she would like high quality modules she could assign that went beyond reading about strategies and instead gave students more options for practice.

A program faculty member also commented about the number of resources included in research guides and suggested that the research guides would be more helpful if they contained differentiated resources for doctoral students in the program.

Two program faculty members suggested that regular communication should take place between programs and the library related to students' needs. One program faculty member also suggested additional procedures that might be added to research consultations. The suggestions related to communication about the needs of doctoral students and the importance of reinforcing library research concepts in conjunction with what students learn during research consultations.

Interview comments from three out of four doctoral students also indicated that students primarily use online resources. Additionally, when doctoral students were asked what distracted the most from conducting library research, one doctoral student commented that the library itself as well as online resources could be overwhelming.

Implications 4a: In relation to disagreements and suggestions for improving library services related to in-person library instruction, the Infolit Modules, the research guides, and research consultations, the library should strive to clearly define instructional objectives for

graduate level students that could be applied in instructional materials. After identifying differentiated library instruction objectives at the graduate level, librarians should then work with program faculty to review and refine objectives. Outreach to programs plays an essential role in defining graduate level learning objectives since program faculty are in the best position to provide valuable insights about the needs of doctoral programs and students. Discussions with program faculty could suggest important criteria about their expectations and program needs.

In this area again, collaboration between program faculty and librarians to review course syllabi, especially for core courses, could be useful to develop potential library assignments and recommendations about library resources and open educational resources that might be added. Assignments that integrate library skills and resources would provide opportunities for doctoral students to practice skills for working with sources, learn more about discipline-specific resources, and may be useful in assessing library research skills.

The library could also consider offering more asynchronous online options by developing additional topics for the Infolit Modules. Additionally, an example of an authentic application of library research skills is provided in the *citation tracking learning resource* described in this study. This resource could be developed and tested as a practical asynchronous exercise that supports the authentic practice of library research skills for doctoral students in relation to conducting literature reviews for their research. Asynchronous options could also provide practical solutions for doctoral students who may primarily use online resources. Three of the four doctoral students interviewed in this study reported they rely heavily on online resources to conducted library research.

Currently, the library's research guides serve as general resources to provide broad options for students to select among potential sources in a subject area. Creating differentiated

research guides for doctoral students is another potential area where the library might want to expand asynchronous options to support doctoral students. Developing differentiating resources for research guides is another area that would also benefit from discussions between program faculty and librarians related to the criteria for resources needed by programs.

Strategies that were suggested in conjunction with individual research consultations also provided useful feedback for the library to consider. One concern related to additional procedures for research consultations however, relates to the sustainability by the library in relation to conducting individual consultations in view of student/librarian ratios.

Findings 4b: Findings from interviews also provided valuable insights about the needs of doctoral students in relation to library research. Program faculty identified several concerns that primarily reflected a focus on higher-level cognitive skills associated with library research. Areas identified by program faculty included: 1) identifying core sources and high-quality sources, 2) working with multiple literatures related to education topics, 3) differentiating sources that included empirical, theoretical, and literature review articles, and 4) prioritizing, organizing, and managing sources. Synthesizing sources was another area identified by three program faculty members; however, in most cases synthesizing sources was viewed as more closely aligns with course requirements and was therefore deemed to generally be outside the realm of the library.

Findings from interviews with librarians provided several insights about planning and directions for library services. All librarians commented on the importance of outreach to identify the needs of doctoral students and academic programs to effectively align library services and programs. One librarian commented on the importance of providing flexible options for services and also suggested that future directions related to library planning should include more asynchronous options for instructional resources and an expansion of the workshop

options provided for graduate programs. The librarian noted also that library services are affected by staffing limitations and planning must include a consideration of sustainable options.

Implications 4b: Insights provided from interviews with librarians related to planning library services in conjunction with the information provided by program faculty about the needs of doctoral students offered important initial criteria that can be used to guide future discussions and planning for potential collaborative projects. These initial findings serve as an important start to move forward in planning services and the data aids in defining an outreach model that more clearly focuses support for the distinct needs of graduate groups and programs and one that is comparable to models being adopted across higher education by academic libraries (Dupuis, 2009; Hahn, 2009; Rempel, 2010).

Research Question 5: In what ways does the integrated data explain factors that influence the utilization of library services and library instruction in the doctoral programs?

Integrated data from this study helped to inform library research objectives for doctoral students and directions for planning valued library services for doctoral students and academic programs. The integrated data provided perspectives from key stakeholders, insights about library services and doctoral students information practices, and formative assessment of doctoral students' library research skills. Based on the integrated data areas related to the potential expansion of graduate workshops and asynchronous learning materials were also identified. The integrated data also helped to identify potential areas of collaboration between program faculty and academic librarians to develop differentiate library services.

Expanded outreach efforts will require academic librarians to work within various organizational structures, to align library goals with program goals, to identify methods for communicating with programs and students, and to negotiate processes related to the distinct

roles of individuals. In the next sections, concepts related to organizational learning are discussed using the Bolman and Deal framework (2008). Each of the areas discusses additional factors associated with expanded outreach efforts and library services for academic programs and the overarching research question addressed in this study.

Subject Librarian Outreach at UCF

In 2013, a new subject librarian model was adopted at the University of Central Florida Libraries. The new model includes an expanded focus on outreach to academic programs across the curriculum. As part of the new model, outreach is also provided for specific user groups. The role of subject librarians in this model involves providing support for faculty/student teaching and learning, research, and collection development. In addition to outreach to assigned programs, some subject librarians also provide outreach for designated user groups that include graduate students, undergraduate students, international students, and transfer students. The current focus on expanded outreach is designed to more closely align library services with academic programs. To better align library programs and services with academic programs, librarians are exploring faculty and student needs, the tiered curriculum of individual programs, and faculty research areas and teaching assignments (Arthur & Tierney, 2013).

Organizational Learning and Bolman and Deal's Framework

Adopting broader systems maps associated with organizational learning can offer insights for librarians who are conducting expanded outreach. Owens and Valesky (2011) discuss organizational learning in the context of educational settings and note that a primary goal of organizational learning is to promote organizational development so that educators can adapt to

change by sensing problems and inventing solutions. Argyris and Schon (1978) also note that organizational learning takes place as learning agents within an organization respond to change in internal and external environments and detect and correct errors in organizational theories-in-use and then embed results of their inquiry into shared images or maps of the organization. In the following sections, the Bolman and Deal's framework (2008) is used to discuss aspects of organizational learning in relation to outreach efforts by librarians and outreach practices.

Structural Frame

Bolman and Deal's (2008) structural frame relates to how work is integrated to meet collective organizational goals, the roles of functional groups, and communication (Bolman & Deal, 2008). Two key functions of the structural frame are the differentiation of specialized roles and coordination and integration of the roles of departments or groups (Bolman & Deal, 2008). Non-profit, higher education institutions in the United States are typically structured to include faculty governance, an administrative hierarchy, and academic departments that represent specialized disciplines (Weiner, 2013). Higher education institutions also operate within a diffused system where functions between departments are loosely coupled, and departments and individuals have varying levels of autonomy (Bolman & Deal, 2008). The phrase loosely coupled is used by Weick (1976) to convey the concept of reciprocal or related events or interactions. In a loosely coupled system, interactions that take place between individuals enable participants to preserve their individual roles and functions while accomplishing broader goals. Often, this type of structure uses less formal methods of communication such as meetings, committees, as well as taskforce initiatives.

Within this frame, findings from this study can be applied in three areas related to the utilization of library services and outreach, which include the services utilized in programs, feedback related to services, and communication. The UCF Libraries' mission statement states that, "By providing information resources and services, facilities and technology, the University of Central Florida Libraries supports learning and teaching, research, creation of knowledge, intellectual growth, and enrichment of the academic experience" (UCF, 2011). Additionally, library instruction that is aligned with academic programs is a component of information fluency (Beile, 2011). Due to the university's Information Fluency initiative and the long-standing collaborations between CEHP program faculty and librarians, the majority of program faculty who participated in this study already integrate library services in their doctoral courses, although each program integrates library services somewhat differently. Only one newer faculty member was unfamiliar with library service options. Overall, communication between doctoral programs and the library ranged from regular contacts to little direct contact. Time was one element that was mentioned by a program faculty member as well as a librarian in interviews. The comment was in the context of learning about library services.

Unsurprisingly, most program faculty routinely assist doctoral students with library research training and also direct doctoral students to the library resources and services within their courses. To ameliorate areas where communication gaps exist, it may be beneficial for the library to offer more opportunities or events to support communication between the programs and librarians. A suggestion made in an interview by one program faculty member was that the library might consider offering a program for faculty to learn about library services. This option might be similar to professional development sessions for program faculty.

Another practical option that might be considered to support outreach would be the development of a web portal to provide resources for doctoral programs. Differentiated resources and instruction were areas of concern addressed by program faculty in interviews. Differentiating resources in online resources in relation to the research guides and the Infolit Modules were other areas addressed. These examples or other potential communication options should be considered to provide outreach based on program needs. In doing so, librarians can help to overcome disconnects that may be due to the diffused nature of interactions within higher education settings.

Human Resource Frame

Bolman and Deal's (2008) human resource frame addresses the interplay between people within an organization as well as aspects related to human capital (Bolman & Deal, 2008). Within this frame, two areas that relate to the utilization of library services include the library research needs identified by participants as well as the feedback participants provided about library services. In this study, program faculty and librarians identified areas related to doctoral students' library research needs. The four areas included: 1) identifying core sources and high-quality sources; 2) working with multiple literatures related to education topics; 3) differentiating sources that included empirical, theoretical, and literature review articles, and 4) prioritizing, organizing, and managing sources. Additionally, when doctoral students were asked what distracted most from library research, one student commented that the library itself as well as online resources could be overwhelming.

Librarians currently offer a series of graduate workshops that function on a drop-in basis and are open to all graduate students at the university. A practical approach to library outreach as

it relates to this study might include the addition of workshop topics for doctoral students enrolled in the programs. Workshops offer the option for librarians to meet with groups of students, which can help to support the instructional needs of students and also address some of the limitations associated with staffing limitations and providing individualized consultations.

Human capital is another of the areas addressed in Bolman and Deal's (2008) human resource frame. In relation to this study, building human capital relates to the provision of professional development opportunities for librarians. Familiarity with assigned academic programs is one criterion in the new outreach model were additional professional development might also offer opportunities for academic librarians to gain training related to expanded outreach initiatives. Similarly, librarians may also consider offering information sessions to new faculty who may wish to learn about library service and program options that they can potentially integrate into their doctoral courses.

Political Frame

In the context of this study, Bolman and Deal's (2008) political frame relates to developing coalitions within organizations. The adoption of library services and the importance of building valued relationships most closely relates to areas addressed in this frame. Bolman and Deal (2008) note that the process of change involves negotiation among groups. Williams (2009) also suggests that as subject librarians work to fulfill new outreach roles, the focus on building valued relationships is essential. In this study, librarians also commented on the importance of building valued relationships with program faculty. UCF librarians have already established long-standing relationships with CEHP program faculty as evidenced in this study; however, some feedback and suggestions were provided related to improvements to services.

Findings from this study suggest that the successful utilization of library services in programs lies in offering flexible options. As such, it is important that librarians and library administrators continue to identify ways to support programs that best aligned with the needs and expectations of programs. Fisher and Ury (1981) outline a constructive approach for negotiating organizational collaborations that apply the idea of principled bargaining, which involves four strategies that include: separating people from problems, focusing on ways to achieve goals, promotion options for mutual gain in order to create gains for all parties, and working from agreed upon standards of fairness for mutually beneficial solutions. Several other authors have also provided insights to guide effective practices for developing coalitions while promoting organizational change. Goleman's (2004) discussion of emotional intelligence contributes insights related to understanding the need for mutuality in productive collaborations. Additionally, Kotter (2006) describes eight practices to guide change that include: establishing a sense of urgency, forming a guiding coalition, creating vision, communicating a defined vision, empowering others to act on the vision, planning for short-term wins, consolidating improvements to produce more change, and institutionalizing new approaches.

Symbolic Frame

Bolman and Deal's (2008) symbolic frame addresses areas related to organizational culture. In the context of this study, the changing roles of librarians as envisioned in new outreach models are discussed. Anthony (2010) suggests that in relation to library outreach disconnects exist in the academy due to perceptions about the roles of librarians in the mission of the university. In a broader context, new outreach models promote change to more closely align library services with academic programs as well as specific user groups. In some cases outreach

efforts may be interpreted as a shift in the traditional roles of academic librarians within the organizational culture. Cowan (2014) suggest though that broader involvement from program faculty is needed to guard against placing too much emphasis on library-centric solutions to library services. In the past library-centric efforts may have contributed to the lack of broader adoption of library initiatives by academic programs. Thus, a more plausible approach to promote outreach will likely need to include recognition of various perceptions related to expanded outreach efforts to identify the needs of programs.

Limitations of the Study

There are several limitations associated with this study that are due either to oversights by the author or logistical constraints. One limitation relates to the use of only one method to distribute the survey used in this study. Fowler (2009) recommends using more than one mode to collect data to minimize nonresponse in surveys. Dillman, Smyth, and Christian (2009) also suggest that a 40% response rate for online surveys can be anticipated. The online survey response rate in this study was 32.0% for Education EdD students (2 males and 6 females) and 42.85% for Educational Leadership EdD students (2 males and 7 females), which indicates a somewhat lower response by students enrolled in the Education EdD program.

Limitations related to the overall sample are also due to the fact that participants only represented one university.

Limitations associated with the quantitative data relate to the use of purposive sampling, the small sample size, and the fact that all of the participants were from a single institution, which limits the ability to generalize the results. Limitations associated with the sample size also relate to the potential for non-response error, as survey participants may not be representative of

individuals in the sample frame who did not volunteer to participate. Additionally, a test of representativeness of the sample was not conducted.

Additionally, there are limitations associated with the representativeness of the sample of doctoral students who participated in audio recorded interviews. The sample did not include doctoral students enrolled in the Education EdD program, which is a source of non-response error. Doctoral students enrolled in the Educational Leadership EdD program who did participate in audio recorded interviews also may not be representative of individuals in the sample frame and those who did not volunteer to participate.

Another limitation related to the qualitative data is associated with the alignment of questions among the interview groups. Modifications to questions could create a closer alignment between interview questions used with doctoral students and those used with program faculty and academic librarians to potentially increase overlap of data collected from the groups.

Finally, to address the validity of design research studies, McKenney and Reeves (2012) note that internal and external validity are provided through documentation and explicit descriptions of interventions. The authors also suggest that testing and repeating interventions can address reliability. Although, documentation and descriptions for the *citation tracking learning resource* are provided in this study through the conjecture description (Sandoval, 2014), the intervention was not yet developed and thus there are limitations associated with the reliability of the intervention and testing.

Conclusion and Recommendations

Library research skills and concepts related to working with the academic literature are considered highly relevant for doctoral students due to the research requirements associated with coursework and the skills needed to effectively conduct literature reviews. Shulman (2005) notes the importance of building expertise to support habits of mind in graduate education. Information competencies are important elements in building discipline-related expertise and contribute to gaining knowledge in the field. The perspectives and recommendations offered in this study are that a discipline-integrated approach where library research is contextualized within courses is the most effective method to support doctoral students and academic programs.

The library and the academic programs could work collaboratively to explore ways to address the needs identified in this study related to library research. Going forward the library and the academic programs could identify flexible options that could expand on the existing integrated approaches for utilizing library instructional options and library resources to address the needs of doctoral students. Flexible options offer practical solutions that address the preferences of program faculty and help to address sustainable solutions for library support of academic programs. Library outreach should also focus on the concerns of program faculty related to providing differentiated resources and instruction to better align services with program needs. Potential topics could be identified and added to the existing graduate workshop series that is offered by UCF librarians. Workshops could be offered at various times during the semester to meet the needs of doctoral students who are busy professionals. Workshops also provide a practical solution for librarians to support doctoral students in a group format.

Three of the four doctoral students interviewed in this study reported that they rely heavily on online resources. The library in collaboration with program faculty could also identify topics that librarians could develop and offer as asynchronous online instructional resources. Students could then utilize differentiated resources online. An example of a potential online resource was described in this study that was based on feedback provided by program faculty about the needs of doctoral students. The *citation tracking learning resource* operationalizes higher-level library research skills and could plausibly be developed as a prototype and tested as a supplemental learning resource for doctoral students enrolled in education programs.

Doctoral students may be entering into their coursework without the prerequisite library research skills needed to effectively work with the literature in their field. This is another area where the insights and expectations of program faculty are needed to identify practical solutions. One potential solution could involve a review of course syllabi that would allow librarians to make recommendations to program faculty about potential assignments, resources, rubrics, and/or assessments that might be added to support library research skills in courses.

Through formal conversations between program faculty and academic librarians findings identified in this study could be addressed to develop practical solutions. This study provides initial insights about additional areas of support for doctoral students enrolled in UCF education programs and recommendations about areas that could be explored. The research questions investigated in this study focus on understanding the needs of doctoral students and academic programs in relation to library research. Throughout higher education academic librarians are also addressing concerns similar to those described in this research. As such, this study might also provide initial insights about library support that could help to inform academic librarians conducting graduate outreach at other academic institutions.

Future Research

Based on the findings from this study and a review of the literature, the following suggestions are proposed for future research.

- Future research should include a larger sample from programs at the university or from education programs outside the university to potentially generalize results.
- Future research should include revisions to interview questions to more closely align questions used with groups to obtain more overlap in the qualitative data.
- Future research should be conducted with a broader group of program faculty to obtain a consensus about doctoral students' needs related to library research.
- Future research should be conducted through collaborations between program faculty and librarians to review graduate level course syllabi and identify potential areas where library resources and services could be further integrated and sequenced within courses.
- Future research should be conducted to develop a prototype of the *citation tracking learning resource* and include testing and evaluation.
- Future research conducted by subject librarians could duplicate this study and explore the use of the *citation tracking learning resource* modified for other disciplines.

APPENDIX A: IRB APPROVAL LETTER

IRB Approval Letter



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Exempt Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Corinne J. Bishop**

Date: **September 25, 2014**

Dear Researcher:

On 9/25/2014, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review: Exempt Determination
Modification Type: Changed study title from "An Investigation of the Information Practices of Education Doctoral Students as a User Community" to "An Investigation of the Information Practices of Education Doctoral Students" and added a few new questions to the interview. Revised interview questions were uploaded.
Project Title: An Investigation of the Information Practices of Education Doctoral Students
Investigator: Corinne J. Bishop
IRB Number: SBE-14-10246
Funding Agency:
Grant Title:
Research ID: N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

A handwritten signature in black ink that reads "Kanielle Chay" with a long horizontal flourish extending to the right.

IRB Coordinator

APPENDIX B: B-TILED COPYRIGHT PERMISSION

B-TILED Copyright Permission

Penny Beile, PhD
Associate Director
Information Services & Scholarly Communication
University of Central Florida Libraries
p.beile@ucf.edu

Date: March 25, 2014

Dear Dr. Beile:

As you know, I am completing my doctoral dissertation at the University of Central Florida titled "A Mixed Methods Case Study: Education Graduate Student User Groups." I would like your permission to reprint in my dissertation the Beile Test of Information Literacy for Education (B-TILED), which is enclosed as a copy with this letter.

Beile Test of Information Literacy for Education (B-TILED)

Beile O'Neil, P. M. (2005). *Development and validation of the Beile test of information literacy for education (B-TILED)*. (Doctoral dissertation). Retrieved from Proquest Dissertation & Theses. (Accession No. 305363702)

The requested permission extends to any future revisions and editions of my dissertation, including non-exclusive world rights in all languages. These rights will in no way restrict republication of the material in any other form by you or by others authorized by you. Your signing of this letter will also confirm that you own or your company owns the copyright to the above-described material.

If these arrangements meet with your approval, please sign this letter where indicated below and return it to me in the enclosed return envelope. Thank you for your attention in this matter.

Sincerely,



Corinne Bishop/Signature
Doctoral Candidate, University of Central Florida EdD Program
corinne.bishop@ucf.edu

PERMISSION GRANTED FOR THE USE REQUESTED ABOVE:

By:  _____ Date: 3/26/14
Penny Beile, PhD/Signature
University of Central Florida Libraries

**APPENDIX C: EDUCATION EdD and EDUCATIONAL
LEADERSHIP EdD SURVEY**

EdD Survey/EdD Leadership Survey

1. Which of the following characteristics best indicates scholarly research?
 - a. available in an academic library
 - b. indexed by ERIC
 - c. reviewed by experts for publication
 - d. written by university faculty

2. Your professor has assigned a paper on the whole language movement. You are not familiar with the topic, so you decide to read a brief history and summary about it. Which of the following sources would be best?
 - a. a book on the topic, such as Perspectives on whole language learning: A case study
 - b. a general encyclopedia, such as Encyclopedia Britannica
 - c. an article on the topic, such as "Whole language in the classroom: A student teacher's perspective"
 - d. an education encyclopedia, such as Encyclopedia of Education

3. Research or periodical databases are designed to include items based on which of the following criteria?
 - a. found on the Internet
 - b. not found on the Internet
 - c. owned by your library
 - d. relevant subject matter

4. ERIC is the most appropriate database to search to locate:
 - a. education article citations and documents
 - b. education publications from 1877 to current
 - c. full-text education articles
 - d. U.S. Department of Education statistics

5. Most research and periodical databases have basic and advanced searching interfaces. Which of the following can you do ONLY in advanced searching?
 - a. add Boolean or search connectors between terms
 - b. enter multiple search terms
 - c. search by keyword
 - d. search multiple terms by field

6. Research studies in education are generally first communicated through:
 - a. books published by education associations
 - b. education encyclopedia entries
 - c. newsletters of education associations
 - d. professional conferences and journal articles

7. You have been assigned to write a short class paper on effective instruction techniques for teaching English as a Second Language (ESL) students. Your professor indicated three recent scholarly sources would be sufficient. Which strategy is best to locate items?
 - a. search a general academic and an education database for journal articles
 - b. search an education database for journal articles
 - c. search the library catalog for books
 - d. search the library catalog for encyclopedias

8. Select the set of search terms that best represent the main concepts in the following:
What are the health risks associated with the use of drug therapy for hyperactive students?
 - a. drug therapy, health risks, hyperactivity
 - b. drug therapy, health risks, students
 - c. drug therapy, hyperactivity, students
 - d. drugs, hyperactivity, therapy

9. Select the set that best represents synonyms and related terms for the concept “college students.”
 - a. colleges, universities, community colleges...
 - b. Gen X, students, undergraduates...
 - c. graduate students, freshmen, sophomores...
 - d. university, adult learners, educational attendees...

10. While researching a paper on character education, you find that it is also sometimes called values education or moral education. You decide to look for information on the subject in a research database, and to save time you write a search statement that includes all three terms. Which of the following is the best example to use when you have fairly synonymous terms and it does not matter which of the terms is found in the record?
 - a. character and values and moral
 - b. character or values or moral
 - c. character, values and moral
 - d. character, values or moral

11. You are using a research database that uses an asterisk (*) as its truncation symbol. When you type in read* you would retrieve records that contained which of the following words?
 - a. examine, peruse, reader, reading
 - b. peruse, read, reader, reading
 - c. read, reader, reads, readmit
 - d. read, reader, reading, reapply

12. You have a class assignment to investigate how group work impacts student learning. A keyword search in ERIC on “group work” has returned over 600 items. To narrow your search, which of the following steps would you next perform?
 - a. add “impacts” as a keyword
 - b. add “student learning” as a keyword
 - c. limit search results by date
 - d. limit search results by publication type

13. The following citation is for:
Massaro, D. (1991). Broadening the domain of the fuzzy logical model of perception. In H. L. Pick, Jr., P. van den Broek, & D. C. Knill (Eds.), *Cognition: Conceptual and methodological issues* (pp. 51-84). Washington, DC: American Psychological Association.
 - a. a book
 - b. a chapter in a book
 - c. a journal article
 - d. an ERIC document

14. Your professor suggested you read a particular article and gave you the following citation:
Shayer, M. (2003). *Not just Piaget, not just Vygotsky*. *Learning and Instruction*, 13(5), 465-485.
Which of the following would you type into the library’s catalog to locate the actual article?
 - a. author search: Shayer
 - b. journal title search: Learning and Instruction
 - c. journal title search: Not just Piaget, not just Vygotsky
 - d. subject search: Piaget and Vygotsky

15. The following item was retrieved from an ERIC database search. What kind of source is it?
Title: Pre-service Elementary Teachers’; Self-Efficacy Beliefs Author(s): Cakiroglu, Jale; Boone, William J. Publication Year: 2001
Abstract: The purpose of this study was to examine pre-service elementary teachers’; self-efficacy beliefs in teaching science.
Notes: Presented at the Annual Meeting of the American Educational Research Association (Seattle, WA, April 10-14, 2001). Number of Pages: 24 ERIC Number: ED453084
- a book
 - a book chapter
 - a conference paper
 - a journal article

16. Using this result from an Internet search engine, who is the “owner” of this Web site?
State policies on planning, funding, and standards. Does the state have technology requirements for students? <http://www.edweek.org/reports/tc98/states/fl.htm>
- business or commercial entity
 - college or university
 - other organization
 - state government agency

17. While developing a lesson plan on the U.S. legislative system, you find the following story on the Internet: Congress Launches National Congress-Awareness Week WASHINGTON, DC— Hoping to counter ignorance of the national legislative body among U.S. citizens, congressional leaders named the first week in August National Congress Awareness Week.; This special week is designed to call attention to America’s very important federal lawmaking body; Speaker of the House Dennis Hastert said. The festivities will kick off with a 10-mile Walk for Congress Awareness

The item is from a newspaper Web site, which states it is “America’s Finest News Source.”
Given this, the following action is in order:

- you can use the story as it’s obviously from a reputable news source
- you decide to investigate the reputation of the publisher by looking at their Web site
- you decide to investigate the reputation of the publisher by looking at other Web sites
- you should not use the story because Web information is not always trustworthy

18. Based on the following paragraph, which sentence should be cited?
(1)Technology use in the schools is often characterized as a potentially dehumanizing force.
(2)Perhaps the fear that the virtual world may lead to passivity and isolation, at the expense of literal social interaction, is valid.
(3)Certainly, educators must ask which uses of technology result in increased learning and a better quality of life.
(4)To address these issues, Hunter has proposed that students work in groups with the computer peripheral to the group and the teacher acting as facilitator.
- 1
 - 2
 - 3
 - 4
19. When is it ethical to use the ideas of another person in a research paper?
- it is never ethical to use someone else's ideas
 - only if you do not use their exact words
 - only when you give them credit
 - only when you receive their permission
20. You are planning an open house for your students' parents. Browsing the Internet, you find the report *Child Safety on the Internet*, which is a US Department of Education publication. If you distribute 30 copies of the report to parents at the open house, which of the following copyright choices is the proper action?
- permission is not needed as the report is from a government agency
 - permission is not needed as the report was found on the Internet
 - permission is not needed as you are only distributing 30 copies
 - permission to distribute 30 copies of the report must be acquired
21. You have an assignment that requires you to use course management software to practice setting up a class grade book. Your school has purchased the software and loaded it in the computer lab, but you have a difficult time getting to the lab due to work conflicts. A friend loans you the software and you load it on your computer. Is this legal?
- no, because this action constitutes a violation of copyright
 - yes, because it is already freely available in the lab
 - yes, because it is education software and therefore able to be shared
 - yes, because your friend owns it and can share as he wants

22. Browsing a weekly news magazine, you come across an article that discusses the future of space exploration. As you are teaching this topic you decide to make copies of the article and share it with your class. Which of the following concepts makes it legally permissible to reproduce portions of works for educational purposes without permission?
- copyright
 - fair use
 - freedom of information
 - intellectual freedom
23. Please enter the field(s) in which you have earned a Master's degree and any other advanced degree(s). (Example: Master's in Elementary Education)
- _____
24. How many years has it been since you earned your Master's degree?
- 1-3 years
 - 4-6 years
 - 7-9 years
 - 10-12 years
 - more than 12 years (Please enter number of years.) _____
25. Please select the UCF Education doctoral program in which you are currently enrolled.
- Doctor of Education, EdD
 - Doctor of Education, EdD Educational Leadership
26. What is your gender?
- Female
 - Male
 - Other

Please enter your Knights email address below. This information is needed to remove any duplicate survey submissions. (Example:jsmith@knights.ucf.edu)

Thank you for completing the survey!

Before you submit your survey, please read the following information

As part of this study, you are also being invited to participate in an audiotaped interview. Interviews will be held at the John C. Hitt Library (Room 235 A/C) located on the UCF main campus. Interview dates/times will be discussed when you are contacted. Interviews will take approximately 60 minutes.

Your participation by scheduling an interview is greatly appreciated and will contribute valuable information to help further this research. To participate in an audiotaped interview, please select YES below before submitting your survey.

YES, please email me to schedule an interview.

**APPENDIX D: INFORMATION LITERACY COMPETENCY
STANDARDS FOR HIGHER EDUCATION 2000**

ACRL Information Literacy Competency Standards for Higher Education Standards,
Performance Indicators, and Outcomes

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 resources (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 other 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., email, bulletin boards, chat rooms)
 - c. Seeks expert opinion through a variety of mechanisms (e.g., interviews, email, 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 purposes of the product or performance
- d. Manipulates 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 copyrighted material

Retrieved from <http://www.ala.org/acrl/standards/informationliteracycompetency>

**APPENDIX E: ISTE NATIONAL EDUCATIONAL TECHNOLOGY
STANDARDS FOR TEACHERS (NETS•T, 2000)**

ISTE Recommended Foundations in Technology for All Teachers

The ISTE Foundation Standards reflect professional studies in education that provide fundamental concepts and skills for applying information technology in educational settings. All candidates seeking initial certification or endorsements in teacher preparation programs should have opportunities to meet the educational technology foundations standards. The following are the approved ISTE NETS for Teachers Standards.

Educational Technology Standards and Performance Indicators for All Teachers

Building on the NETS for Students, the ISTE NETS for Teachers (NETS•T), which focus on preservice teacher education, define the fundamental concepts, knowledge, skills, and attitudes for applying technology in educational settings. All candidates seeking certification or endorsements in teacher preparation should meet these educational technology standards. It is the responsibility of faculty across the university and at cooperating schools to provide opportunities for teacher candidates to meet these standards.

The six standards areas with performance indicators listed below are designed to be general enough to be customized to fit state, university, or district guidelines and yet specific enough to define the scope of the topic. Performance indicators for each standard provide specific outcomes to be measured when developing a set of assessment tools. The standards and the performance indicators also provide guidelines for teachers currently in the classroom.

I. TECHNOLOGY OPERATIONS AND CONCEPTS.

Teachers demonstrate a sound understanding of technology operations and concepts. Teachers:

- A. demonstrate introductory knowledge, skills, and understanding of concepts related to technology (as described in the ISTE National Education Technology Standards for Students)
- B. demonstrate continual growth in technology knowledge and skills to stay abreast of current and emerging technologies.

II. PLANNING AND DESIGNING LEARNING ENVIRONMENTS AND EXPERIENCES.

Teachers plan and design effective learning environments and experiences supported by technology. Teachers:

- A. design developmentally appropriate learning opportunities that apply technology-enhanced instructional strategies to support the diverse needs of learners.
- B. apply current research on teaching and learning with technology when planning learning environments and experiences.
- C. identify and locate technology resources and evaluate them for accuracy and suitability.
- D. plan for the management of technology resources within the context of learning activities.
- E. plan strategies to manage student learning in a technology-enhanced environment.

III. **TEACHING, LEARNING, AND THE CURRICULUM.**

Teachers implement curriculum plans, that include methods and strategies for applying technology to maximize student learning. Teachers:

- A. facilitate technology-enhanced experiences that address content standards and student technology standards.
- B. use technology to support learner-centered strategies that address the diverse needs of students.
- C. apply technology to develop students' higher order skills and creativity.
- D. manage student learning activities in a technology-enhanced environment.

IV. **ASSESSMENT AND EVALUATION.**

Teachers apply technology to facilitate a variety of effective assessment and evaluation strategies. Teachers:

- A. apply technology in assessing student learning of subject matter using a variety of assessment techniques.
- B. use technology resources to collect and analyze data, interpret results, and communicate findings to improve instructional practice and maximize student learning.
- C. apply multiple methods of evaluation to determine students' appropriate use of technology resources for learning, communication, and productivity.

V. **PRODUCTIVITY AND PROFESSIONAL PRACTICE.**

Teachers use technology to enhance their productivity and professional practice.

Teachers:

- A. use technology resources to engage in ongoing professional development and lifelong learning.
- B. continually evaluate and reflect on professional practice to make informed decisions regarding the use of technology in support of student learning.
- C. apply technology to increase productivity.
- D. use technology to communicate and collaborate with peers, parents, and the larger community in order to nurture student learning.

VI. **SOCIAL, ETHICAL, LEGAL, AND HUMAN ISSUES.**

Teachers understand the social, ethical, legal, and human issues surrounding the use of technology in PK-12 schools and apply those principles in practice. Teachers:

- A. model and teach legal and ethical practice related to technology use.
- B. apply technology resources to enable and empower learners with diverse backgrounds, characteristics, and abilities.
- C. identify and use technology resources that affirm diversity
- D. promote safe and healthy use of technology resources.
- E. facilitate equitable access to technology resources for all students.

Retrieved from <http://www.iste.org/standards>

**APPENDIX F: EDUCATION EdD and EDUCATIONAL LEADERSHIP
EdD ONLINE SURVEY INVITATION AND EMAIL REMINDERS**

Education EdD and Educational Leadership EdD Online Survey Invitation and Consent

Study Title: Investigating the Information Practices of Education Doctoral Students as a User Community

Dear Student,

My name is Corinne Bishop, and I am doctoral candidate at the University of Central Florida working with Dr. Glenda Gunter.

You are being invited to participate in a research study. The purpose of the study is to better understand education doctoral students' information practices. Your participation is greatly appreciated and will provide important insights about library services.

Participants are being asked to complete the online B-TILED survey that includes demographic questions and questions from the Beile Test of Information Literacy for Education. (Information literacy refers to concepts related to locating, evaluating, and using information.)

- The survey includes 25 questions and will take approximately 25-30 minutes to complete.

At the end of the survey, you will also be asked to volunteer to participate in an audiotaped interview. Interview participants will be contacted to schedule an interview date and time through their Knight's email account.

- Interviews include 10 questions and will take approximately 60 minutes to complete.
- Interviews will be held at the John C. Hitt Library in (Room 235 A or C).

There are no risks associated with your participation in this study. Every precaution will be made to keep all study information confidential and secure. Participation is voluntary and will have no impact on your grades. You will not be individually identified. You may withdraw at any time. You must be 18 years old to participate in all study materials.

If you have questions about this information or to report a problem, please contact: Corinne Bishop, doctoral candidate at corinne.bishop@ucf.edu or Glenda Gunter, PhD, faculty supervisor, College of Education & Human Performance at glenda.gunter@ucf.edu

IRB contact about your rights in the study or to report a complaint: Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.

Please click the link below to go to the B-TILED survey
(you may also copy and paste the link into your web browser)

Survey Link

THANK YOU FOR PARTICIPATING!

Education EdD and Educational Leadership EdD Online Survey Follow Up #1

Study Title: Investigating the Information Practices of Education Doctoral Students as a User Community

Dear Student, My name is Corinne Bishop, and I am doctoral candidate at the University of Central Florida working with Dr. Glenda Gunter.

You were recently invited to participate in a research study. The purpose of the study is to better understand education doctoral students' information practices. Your participation is needed to provide important insights about library services.

If you have already completed the survey, **thank you for your participation!**

If you have not completed the survey, please consider taking a few minutes to complete it now.

Participants are being asked to complete the online B-TILED survey that includes demographic questions and questions from the Beile Test of Information Literacy for Education. (Information literacy refers to concepts related to locating, evaluating, and using information.)

- The survey includes 25 questions and will take approximately 25-30 minutes to complete.

At the end of the survey, you will also be asked to volunteer to participate in an audiotaped interview. Interview participants will be contacted to schedule an interview date and time through their Knight's email account.

- Interviews include 10 questions and will take approximately 60 minutes to complete.
- Interviews will be held at the John C. Hitt Library in (Room 235 A or C).

There are no risks associated with your participation in this study. Every precaution will be made to keep all study information confidential and secure. Participation is voluntary and will have no impact on your grades. You will not be individually identified. You may withdraw at any time. You must be 18 years old to participate in all study materials.

If you have questions about this information or to report a problem, please contact: Corinne Bishop, doctoral candidate at corinne.bishop@ucf.edu or Glenda Gunter, PhD, faculty supervisor, College of Education & Human Performance at glenda.gunter@ucf.edu

IRB contact about your rights in the study or to report a complaint: Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.

Please click the link below to go to the B-TILED survey
(you may also copy and paste the link into your web browser)

Survey Link

THANK YOU FOR PARTICIPATING!

Education EdD and Educational Leadership EdD Online Survey Follow Up #2

Study Title: Investigating the Information Practices of Education Doctoral Students as a User Community

Dear Student, My name is Corinne Bishop, and I am doctoral candidate at the University of Central Florida working with Dr. Glenda Gunter.

This research reminder invitation is sent to invite you to participate in the study. Receiving the opinions of every student is very important. If you have not completed the survey, please consider taking a few minutes to complete it now.

If you have already completed the B-TILED survey, **thank you for participating!**

Participants are being asked to complete the online B-TILED survey that includes demographic questions and questions from the Beile Test of Information Literacy for Education. (Information literacy refers to concepts related to locating, evaluating, and using information.)

- The survey includes 25 questions and will take approximately 25-30 minutes to complete.

At the end of the survey, you will also be asked to volunteer to participate in an audiotaped interview. Interview participants will be contacted to schedule an interview date and time through their Knight's email account.

- Interviews include 10 questions and will take approximately 60 minutes to complete.
- Interviews will be held at the John C. Hitt Library in (Room 235 A or C).

There are no risks associated with your participation in this study. Every precaution will be made to keep all study information confidential and secure. Participation is voluntary and will have no impact on your grades. You will not be individually identified. You may withdraw at any time. You must be 18 years old to participate in all study materials.

If you have questions about this information or to report a problem, please contact: Corinne Bishop, doctoral candidate at corinne.bishop@ucf.edu or Glenda Gunter, PhD, faculty supervisor, College of Education & Human Performance at glenda.gunter@ucf.edu

IRB contact about your rights in the study or to report a complaint: Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.

Please click the link below to go to the B-TILED survey.
(you may also copy and paste the link into your web browser)

Survey Link

THANK YOU FOR PARTICIPATING!

**APPENDIX G: DOCTORAL STUDENT AUDIO RECORDED INTERVIEW
QUESTIONS**

Doctoral Student Audiotaped Interview Questions

1. I will begin the interview by asking a few questions about your professional background.
 - a. In which field are you currently working?
 - b. What are your long-term professional goals?
 - c. In which field did you earn your Master's degree or other advanced degrees?
 - d. When did you earn your Master's or other advanced degree(s)?

There are some terms I'd like to discuss as a background and context for the interview questions.

Librarians often use the terms information literacy to describe library research skills and concepts related to finding information, selecting research tools, using search strategies, evaluating the quality of sources, and ethically using information such as citing. The terms library resources or sources are used in this interview to refer to both scholarly and popular sources – and coursework or assignments may refer to research doctoral students conduct for literature reviews, dissertation proposals, or research papers

2. Please think of a recent assignment or one you are currently working on and describe the assignment and how you used different types of information or library resources to complete it.
 - a. What was the purpose of the assignment?
(Thesis/dissertation, literature review, research paper)?
 - b. When was it completed - how long ago?
 - c. What types of information did you use? Why?
 - d. What research tools did you use? Why?
 - e. What search strategies did you use? Why?
3. How did you learn about conducting library research or using library resources
 - a. What types of assistance have you received at the library or from librarians related to conducting library research or using library resources?
4. What has helped you the most to conduct library research or to use library resources in your courses?
 - a. In what ways has it been helpful? Why?
5. What has detracted the most when you conduct library research or use library resources for your coursework?
6. How well do you think the B-TILED survey measured your skills related to conducting library research?
 - a. How well did the questions reflect the types of things you typically do related to your coursework?
7. What else should I have asked in this interview to learn more about doctoral students' information practices? What would you add to this discussion?

**APPENDIX H: PROGRAM FACULTY AUDIO RECORDED INTERVIEW
QUESTIONS**

Program Faculty Audiotaped Interview Questions

1. Can you describe the courses you teach in the EdD or EdD Leadership program?
 - a. How long have you taught the courses?
 - b. Are any courses in the program taught in online or blended formats?

Librarians often use the terms information literacy to describe library research skills and concepts related to finding information, selecting research tools, using search strategies, evaluating the quality of sources, and ethically using information such as citing.

- a. Do you think faculty are familiar with the terms?
- b. How do you describe library research skills?

The terms library resources or sources are used in this interview to refer to both scholarly and popular sources – and coursework or assignments may refer to research doctoral students conduct for literature reviews, dissertation proposals, or research papers.

2. How would you describe the ways that communication takes place between the EdD or EdD Leadership program and the library in relation to utilizing library services or library instruction?
 - a. Are faculty informed about the different types of library services and library instruction options available for doctoral students?
3. Do faculty in the program agree on the need to utilize library services and library instruction?
 - a. What factors do you think either encourage or discourage faculty from utilizing library services or library instruction options?
4. What library services and library instruction options are used in the program?
5. What key concerns do you have related to doctoral students' conducting library research especially in relation to the literature review process?
6. What else should I have asked to better understand how library services or library instruction is utilized in the program?
7. How satisfied are you with library services or the library instruction?

Potential Prompts or Follow up Questions

The following questions may also be asked as follow up questions for any of the main interview questions.

- Could you say more about _____
- Could you describe _____
- Could you give examples of _____
- Did you know about _____
- How did you learn about _____
- How are goals communicated about _____
- What is your opinion about _____
- How effective was _____
- What do you think about _____
- What surprised you about _____
- Why did you select/use _____
- How would you do _____ differently
- How important is _____
- What are the common problems with _____
- How confident are you with using _____
- What did you need help with _____
- Would like to know more about _____
- Why? Why not?

Interview questions adapted from Kvale & Brinkmann (2009); Patton (2002); Seidman (2006).

**APPENDIX I: LIBRARIAN AUDIO RECORDED INTERVIEW
QUESTIONS**

Librarian Interview Questions

1. Can you describe your familiarity with courses in the EdD and EdD in Educational Leadership Executive programs and any background you might have about working with faculty or support you provided for students?
 - a. How long have you supported the courses?
 - b. There are some terms I'd like to discuss as a background and context for the interview questions.

Librarians often use the terms information literacy to describe library research skills and concepts related to finding information, selecting research tools, using search strategies, evaluating the quality of sources, and ethically using information such as citing.

- c. Do you think faculty are familiar with the terms?
- d. How do you describe library research skills?

The terms library resources or sources are used in this interview to refer to both scholarly and popular sources – and coursework or assignments may refer to research doctoral students conduct for literature reviews, dissertation proposals, or research papers.

2. How would you describe the ways that communication takes place between the EdD or EdD Leadership program and the library in relation to using library services or library instruction?
 - a. Are faculty informed about the different types of library services and library instruction options available for doctoral students?
3. Do you think faculty in the programs agree on the need to utilize library services and library instruction?
 - a. What factors do you think either encourage or discourage faculty from utilizing library services or library instruction options?
4. What key concerns do you have related to doctoral students' conducting library research especially in relation to the literature review process?
5. What else should I have asked to better understand how library services, resources, or library instruction is utilized in the program?

Potential Prompts or Follow up Questions

The following questions may also be asked as follow up questions for any of the main interview questions.

- Could you say more about _____
- Could you describe _____
- Could you give examples of _____
- Did you know about _____
- How did you learn about _____
- How are goals communicated about _____
- What is your opinion about _____
- How effective was _____
- What do you think about _____
- What surprised you about _____
- Why did you select/use _____
- How would you do _____ differently
- How important is _____
- What are the common problems with _____
- How confident are you with using _____
- What did you need help with _____
- Would like to know more about _____
- Why? Why not?

Interview questions adapted from Kvale & Brinkmann (2009); Patton (2002); Seidman (2006).

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