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## USING THE I-LEARN MODEL FOR INFORMATION LITERACY INSTRUCTION: AN EXPERIMENTAL STUDY

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USING THE I-LEARN MODEL  
FOR INFORMATION LITERACY INSTRUCTION:  
AN EXPERIMENTAL STUDY

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DISSERTATION

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A dissertation submitted in partial fulfillment of the  
requirements for the degree of Doctor of Education  
in the College of Education  
at the University of Kentucky

By  
Stacey Carolyn Greenwell

Lexington, KY

Director: Dr. Gary J. Anglin  
Associate Professor of Education and Instructional Systems Design

Lexington, KY

2013

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## ABSTRACT OF DISSERTATION

### USING THE I-LEARN MODEL FOR INFORMATION LITERACY INSTRUCTION: AN EXPERIMENTAL STUDY

Given the proliferation of information and the lifelong importance of information literacy skills, there is a need to determine how to best design information literacy instruction in order to help students locate, evaluate, and use information more effectively. This experimental study examined whether information literacy skills instruction designed using the I-LEARN model increased student understanding and application of information literacy concepts as compared to how librarians currently provide information literacy skills instruction. The experimental group received an instruction session and an online library research guide designed using the I-LEARN model, and the control group received an instruction session and an online library guide designed using a systems model. The analysis of the results of pre- and post-test scores and scores on a citation analysis showed that there was no significant difference between the two groups.

**KEYWORDS:** Instructional Design, Information Literacy, Library Instruction, Information Science, Instruction

Stacey Carolyn Greenwell  
Student's Signature

November 7, 2013  
Date

USING THE I-LEARN MODEL  
FOR INFORMATION LITERACY INSTRUCTION:  
AN EXPERIMENTAL STUDY

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## **CHAPTER ONE**

### **Overview and Rationale**

Information literacy can be defined in multiple ways, though most definitions describe it as encompassing the skills of locating, evaluating, and using needed information effectively. Information literacy skills are essential for lifelong learning, through all levels of schooling, in the workplace, and in daily life decisions (Neuman, 2011b). While librarians have provided this or related types of instruction for decades, the need for information literacy instruction is increasing as information becomes more available outside of libraries and other academic settings (Head & Eisenberg, 2010).

Use of an instructional design model provides a systematic approach to accomplishing specific learning objectives. Design models often incorporate multiple theories of learning and are based in research and practice, and appropriate use of a well-designed model increases the chance that learning will occur in the instruction (Morrison, Ross, & Kemp, 2007). While librarians have been providing instruction for decades, it has often been without the use of a model. As librarians become increasingly involved in providing instruction, it is essential that they use an appropriate design for this instruction.

### **Problem Statement**

While design models have been used in information literacy instruction, few have been well-researched or have a strong foundation in learning theory and research. The culmination of years of collaboration and intersection between the fields of instructional design and library/information science, the I-LEARN (Neuman, 2011a) instructional design model bridges the two fields of information science and instructional design. In

addition to its strong theoretical foundation from both fields (Marchioni, 2005; Anderson & Krathwohl, 2001) what also sets the I-LEARN model apart from others is that its core is information, the building block of all learning, and the model is focused primarily on information use and learning. While the Information Search Process (ISP) model (Kuhlthau, 2004) and the Big Six model (Eisenberg & Berkowitz, 2011) have long been used by school media specialists and the existing research literature is focused on those two models, “neither connect learning to information seeking and both are still primary information seeking models rather than learning models” (Neuman, 2011b, p. 24). I-LEARN is a learning-focused model for information literacy skills instruction, and it needs to be tested and further examined to determine its impact on student learning of information literacy skills.

### **Purpose of Study**

Based on its theoretical foundations, the I-LEARN model would be ideal for designing information literacy instruction. The primary purpose of this study is to determine if information literacy skills instruction designed using the I-LEARN model will increase student understanding and application of information literacy concepts as compared to how librarians currently provide information literacy skills instruction.

### **Research Questions**

The two research questions for this study are:

- Does instruction designed with the I-LEARN model increase student understanding of the steps and procedure necessary to locate and evaluate information?

- Does instruction designed with the I-LEARN model increase student ability to select appropriate information resources for a given assignment to write a research paper?

### **Need for Research**

To date, the literature includes few experimental research studies focused on the use of an instructional design model to facilitate student learning of information literacy skills. Kuhlthau's ISP model (2004) has been examined in original research that will be described in Chapter Two; Callison and Preddy (2006) point out that ISP has been tested more extensively than any other model to date. Much of the research done has been conducted at least partly by the model's author and is more focused on the emotions of the subject when going through each step of the search process (Kuhlthau, 1988; Kuhlthau et al, 1990; Kuhlthau, 1991; Kuhlthau et al, 2008; Hyldegaard, 2006). This is useful in considering student attitudes toward information seeking; however, it is not necessarily directly tied to student learning. Likewise, the Big Six (Eisenberg & Berkowitz, 2011) model has been examined through some original research, though it too is often focused on student perceptions (Wolfe et al, 2003; Chang, 2007). The research to date is not focused specifically on student learning as a result of instruction designed by the model.

Numerous models for information literacy instruction exist and continue to be developed, but aside from the ISP model and the Big Six model, none have been evaluated for their effectiveness through original research to determine their impact on student learning. Some reasons for the proliferation of instructional design models are described by Andrews and Goodson (1980), suggesting that new models may be

developed because the instructional need is a special circumstance that a previous model will not address. Other reasons may include a lack of documentation describing the model's use or the model may have "a weak or nonexistent theory base" (p. 162). The reasons presented by Andrews and Goodson (1980) apply directly to the proliferation of models without adequate testing and support why a model needs to be tested. Based on the current research literature surrounding existing instructional design models for information literacy instruction which will be described in detail in Chapter 2, these reasons describe why a new design model is needed for information literacy instruction and why the model needs to be studied to examine its role in student learning. The I-LEARN model could be that model, but testing the model is the necessary next step to determine its impact on student learning.

### **Summary**

An instructional design model is needed for designing information literacy instruction that includes the critical skills of locating, evaluating, and using information effectively. The result of years of collaboration and intersection between the fields of instructional design and library/information science, the I-LEARN model is grounded in information science and instructional design theory. Examining the I-LEARN model in original research is the next step in determining its impact on student learning in practice. If students are given instruction designed using the I-LEARN model, will students learn how to locate, evaluate, and use information?

The primary purpose of this study is to determine if information literacy skills instruction designed using the I-LEARN model will increase student understanding and application of information literacy concepts as compared to how librarians currently

provide information literacy skills instruction. Given the proliferation of information and the lifelong importance of information literacy skills, there is a need to determine if instruction designed with the model will help students locate, evaluate, and use information more effectively than through current methods of providing information literacy skills instruction. A successful implementation of the I-LEARN model could lead to future adoption of the model by other librarians and instructional designers in order to design information literacy skills instruction.

## **CHAPTER TWO**

### **Literature Review**

This review provides a discussion of the use of instructional design models for information literacy instruction. The review begins with a section on search methodology followed by a section describing the definition, purpose, and value of information literacy instruction. The bulk of the review is then focused in three areas: the need for an instructional design model to design effective instruction to teach information literacy skills, a discussion of instructional design models used for this purpose as well as a discussion of the literature on implementation of those models, and a section summarizing the intersection of instructional design and information literacy instruction. The review will then include a discussion of a new instructional design model, I-LEARN (Neuman, 2011a), and describe how this model integrates instructional design theory and library and information science theory into a model that bridges both fields. The model is ideal for use in information literacy instruction, and the review will conclude with a summary and discussion for the need for research relative to the I-LEARN model. Specifically, information literacy instruction needs to be designed using the I-LEARN model to determine the model's relationship to facilitating student learning.

While hundreds of papers can be found which relate to designing instruction to teach information literacy skills, few of these papers are well-designed studies using established research methodologies. The purpose of this review is to examine the literature focused on instructional design and information literacy instruction, demonstrating the need for further research related to I-LEARN, a research-based instructional design model developed for information literacy instruction.



## **Search Methodology**

The databases searched for this literature review include: ERIC; Wilson Education Full Text; Web of Science; Library Literature and Information Science; Library, Information Science, and Technology Abstracts; ProQuest Dissertations and Theses; WorldCat; and Google Scholar. Search terms used included: instructional design, instructional systems design, instructional design models, library instruction, information literacy instruction, information science, and bibliographic instruction. Multiple searches were conducted which combined instructional design terms with library-related terms. Additionally, bibliographies were consulted to find related literature.

Much of the literature in the area of information literacy instruction is heavily directed toward practitioners, focusing on successful strategies from past practice and providing tips for future practice. While useful, these articles are not relevant for this literature review. After removing this type of literature and focusing on peer-reviewed journals and established monograph publishers, this resulted in 112 monographs and articles related to information literacy instruction and instructional design. Of those, nearly all are conceptual articles and theoretical pieces. Seven articles are original research that will be discussed in detail in this review.

## **Primary Literature Review**

The following review is focused in four areas. First, the review includes a section that offers a brief history of information literacy instruction, defines information literacy instruction, and describes the purpose and value of this instruction according to the literature. Next, the review describes the need for using an instructional design model in

order to design information literacy instruction. The review then examines instructional design models that have been used previously in designing information literacy instruction and offers a discussion of those models as well as the literature describing implementations of those models. Original research focused on those models will be described in more detail in the last section of this review. Finally, the review describes the intersection of instructional design and information literacy instructional theory and practice, making a case for the need to further explore an instructional design model, I-LEARN (Neuman, 2011a), which is based in instructional design theory and research as well as library and information science theory. While “school media specialist” is the preferred term for the professional in a school media center, the term “librarian” will largely be used in this literature review as literature related to both academic libraries and school media centers will be described in this review. The review will include discussion of literature related to school media librarianship, but the focus of this study is on academic libraries, and academic libraries will be specifically discussed wherever applicable.

## **What is Information Literacy?**

### **A Brief History of Information Literacy**

Librarians have provided instruction for decades—in school media centers, public libraries, academic libraries, and special libraries. The scope of this review will focus on academic libraries and school media centers as both have educational goals and somewhat similar standards for information literacy instruction (Association of College and Research Libraries, 2000; American Association of School Librarians, 2007).

Farmer (2011) describes these standards as focusing on more than just library skills as

they “encompass much more than a physical library, incorporate more formats of information, and address the issues of generating new knowledge as much as verifying and applying existing knowledge” (p. 88). While many standards for information literacy and much of the literature is focused specifically on school media centers, this review will discuss the academic library environment wherever possible.

The terminology and focus of library instruction has changed over the years. Bibliographic instruction was the common term in the 1970s-1980s, and at the time, the focus was on assisting students in using the physical card catalog and print indexes (Lorenzen, 2001). Annotated bibliographies and pathfinders were popular tools to point students to specific resources on a given topic. Much of the instruction revolved around locating information—how to use a print index, understand the symbols and abbreviations, and ultimately retrieve the item from the shelf or properly fill out a call slip. This instruction was primarily focused on locating information rather than use of information. However, bibliographic instruction programs were in some ways the predecessors to information literacy instruction programs (Bruce, 1997).

The first use of the term “information literacy” in the literature was in 1974, when Zurkowski used the term to describe library and information skills in a government report to the United States National Commission on Libraries and Information Science. He described the information literate person as: “anyone who has learned to use a wide range of information sources in order to solve problems at work and in his or her daily life” (Zurkowski, 1974, p. 3). The term appeared sporadically in the literature until after the release of the *Nation at Risk* report in 1983. While the report described the skills of an information literate person, it virtually ignored school libraries and the role

librarians/school media specialists could play in helping students develop these skills (Doyle, 1994). This sparked greater conversation about information literacy, including the development of multiple standards for information literacy (AASL/AECT, 1988; AASL/AECT, 1998; ACRL, 2000; AASL, 2007) as well as a national report from a Presidential committee on information literacy (ALA, 1989). Discussion about information literacy and the role of the librarian in that instruction continues today.

### **Information Literacy Defined**

Similar to the discussion surrounding the varied definitions of technological literacy (Gentry & Csete, 1991), information literacy also stirs some debate related to its definition and purpose. In 1989, Breivik and Gee, a university librarian and a university president, co-authored a book that describes the importance of information literacy as a lifelong skill, arguing that the library plays a critical role in providing information literacy instruction through partnerships with faculty and university administration. They describe lifelong information literacy as including all types of information: “Instead of drowning in an abundance of information that floods their lives, information literate people know how to find, evaluate, and use information effectively to solve a particular problem or make a decision, whether the information comes from a computer, a book, a government agency, a film, or any of a number of other possible resources” (Breivik & Gee, 1989, p. 13).

Grassian and Kaplowitz have since pointed out that information literacy has been defined in many ways: “Information literacy has been described over the years as a process, a skill set, a competence, an attitudinal or personality trait, a set of abilities, a way to help people contribute positively to the learning community and to society, and a

construct that is created by the ways in which a person interacts with information” (2009, p. 5). Most definitions include some reference to critical thinking, problem solving, locating information in a variety of formats, and evaluating the quality and worthiness of information. Some definitions focus on the lifelong need for these skills, pointing out the importance of these skills in the workforce and in making life decisions.

For the purpose of this review, the definition from the American Library Association’s Presidential Committee on Information Literacy (1989) will be used:

“To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information.”

This definition is succinct and often cited in the literature. The Association of College and Research Libraries (ACRL) uses this definition in its *Information Literacy Competency Standards for Higher Education* (ACRL, 2000). The American Association of School Librarians (AASL) uses a similar definition while considering “multiple literacies, including digital, visual, textual, and technological” (AASL, 2007). Bruce (1997) also describes information literacy as a multi-faceted set of skills encompassing information technology literacy, computer literacy, learning to learn/lifelong learning, information skills, and library skills.

The terms information literacy instruction and library instruction are common and sometimes used interchangeably, though there is much debate as to the nuances of the definitions of those terms (Owusu-Ansa, 2003). According to an analysis of the literature from 1977-2007, the phrase “information literacy” is most frequently used to describe these instructional activities, appearing in 81% of the articles analyzed (Pinto et al, 2010). For the purpose of this review, these instructional activities will be referred to as

information literacy instruction, and the term librarian will generally be used to refer to the professional providing that instruction, even though the term school media specialist is preferred for K-12 environments.

### **Need for Information Literacy Instruction**

With the ubiquity of Internet searching, the ability to effectively evaluate information becomes even more important. Too many information seekers rely on the first few results from a search engine, often not considering the reliability, authority, accuracy, or currency of the source (Head & Eisenberg, 2010). Neuman (2011b) describes the importance of helping the student develop methods to navigate complex information sources in today's world—not everything is online or credible, and library professionals play an important role in helping students develop that understanding. Head and Eisenberg, principal researchers for the Project Information Literacy project at the University of Washington iSchool, have conducted a number of surveys with college students related to information seeking and use. In a 2010 report, they analyzed the results of 8353 respondents on 25 campuses in Spring 2010. Their findings show most students believe they are competent in locating and evaluating information though they admitted to having difficulty in knowing where to start. When students felt they needed help, they most often turned to family and friends when evaluating information for personal use, asked instructors for advice when evaluating information for a class, and rarely considered asking a librarian for assistance with any information need. When asked about specific sources, the students consulted course readings and Internet search engines first, rarely consulted databases containing authoritative materials, and librarians

were at the bottom of their rankings of possible information sources to consult (Head & Eisenberg, 2010).

Head and Eisenberg (2010) and others (Prensky, 2001; Oblinger & Oblinger, 2005; McClure & Klink, 2009) suggest that students may need help in locating, evaluating, and using credible information resources. This applies to their time in school but beyond that as well. Employers increasingly point out that students are ill-prepared for the world of work upon graduation, citing the need for students to have specific skills at graduation related to information seeking, evaluation, and use (Weiner, 2011). Providing adequate information literacy instruction throughout a student's educational experience is one step toward remedying the apparent lack of information skills. Higher education has been taking notice, as all six higher education accrediting bodies reference information literacy or terms that relate to the concept in their standards for accreditation (Grassian & Kaplowitz, 2009) and information literacy instruction is increasingly mandated in higher education (Thompson, 2002). With increasing support for the idea of information literacy skills as a lifelong necessity, here is an opportunity for librarians to plan, design, and conduct instruction to help meet this need.

## **Summary**

Information literacy can be defined in multiple ways, though most definitions describe it as encompassing the skills of locating, evaluating, and using needed information effectively. Information literacy skills are essential for lifelong learning, through all levels of schooling, in the workplace, and in daily life decisions. While librarians have provided this or related types of instruction for decades, the need for

information literacy instruction is increasing as information becomes more available outside of libraries and other academic settings.

## **The Need for a Design Model in Providing Information Literacy Instruction**

### **Why Use an Instructional Design Model?**

Using a design model provides the instructor with a systematic approach to accomplishing specific learning objectives. The design model represents specific elements of the instructional process: the goals of the instruction, instructional strategies, used, and evaluation of student learning. Often the design model used will incorporate multiple theories of learning and be based in research and practice. Saettler (1990) describes the curriculum reform movements of the 1960s as one of the elements which stimulated interest in a more systematic approach to instruction and the need for design models. In their book outlining their frequently used design model, Gagne and Briggs (1979) describe the importance of planning instruction in a systematic manner in order for it to be effective. Andrews and Goodson (1980) describe four purposes of the instructional design model:

1. Improving learning and instruction by means of the problem-solving and feedback characteristics of the systematic approach.
2. Improving management of instructional design and development by means of the monitoring and control functions of the systematic approach.
3. Improving evaluation processes by means of the designated components and sequence of events, including the feedback and revision events, inherent in models of systematic instructional design.
4. Testing or building learning or instructional theory by means of theory-based design within a model of systematic instructional design (p. 164).

Morrison, Ross, and Kemp (2007) point out that using a model makes instruction more effective and efficient, often saving time and money. In short, in order to develop



effective instruction, it is helpful to use an established design model based in learning theory and practice.

### **Issues Unique to Information Literacy Instruction**

Much of what we know from theories of learning and instructional design strategies runs counter to how librarians often practice instruction. The single, one-shot, one class period session is not necessarily effective, and yet that largely remains the way librarians provide instruction (Booth, 2011). Lichtenstein (2000) laments: “too often, librarians approach the design of information literacy programs without paying attention to the decades of successful work that has been accomplished by educational psychologists in understanding how people learn” (p. 25). Cramming as much information as possible into a 50 minute session without time for practice or reflection and no opportunities for assessment and feedback will result in little retention of the information. Booth (2011) describes librarians as often being victims of their own expertise—“the curse of knowledge”—librarians tend to provide far too much information in an attempt to be helpful, though instructional design strategies tell us that this is not an effective approach.

While many school media specialists may likely already be teachers, have taken some coursework related to instructional design, or are involved with continuing education related to instructional design, many academic librarians are not necessarily that prepared. Dent (2009) points out that “the theory behind how we learn is often not incorporated widely into the design of instruction in the academic library framework” (p. 17). Booth (2011) has written about the “sink or swim” approach that academic librarians often take the first time they are in the classroom. Perhaps they were fortunate

to have had a single class related to instruction while enrolled in a library science master's program, but many times they have no experience with learning theories or effective instructional strategies. Lichtenstein (2000) points out: "it is as though librarians think they must discover all over again the basics of learning theory that colleges of education have, for years, been teaching prospective educators. This is an inefficient approach, and it makes little sense. Instead we can build on what is already known about how people learn and quickly move to apply those concepts to our information literacy efforts" (p. 26).

Bell and Shank (2007) suggest that the librarian of the future should be the "blended librarian": one with skills in information science, educational technology, and instructional design. If librarians are going to continue providing single class period instruction sessions, it is imperative that they provide this instruction in the most effective, efficient manner. If faculty are going to continue giving librarians valuable class time, the librarians must provide the best possible instructional experience with the time allotted. Bell and Shank argue that as the role of the librarian continues to change, these technology and instructional skills will be essential as librarians take on a greater instructional role.

The need for instructional design expertise in libraries is becoming more apparent as more academic libraries are hiring librarians with instructional design expertise or an advanced degree in instructional design. Dent (2009) devotes an entire chapter to this and includes numerous position descriptions for instructional design librarians. Small (1988) describes the importance of librarians needing instructional design training. ACRL's (2007) proficiencies for instruction librarians and coordinators include

instructional design skills on a list of a dozen competencies for librarians in those positions. Bell and Shank (2007) describe the specific competencies for the “blended librarian” and suggest that every library science graduate student take a course in instructional design. They argue that design has implications for so much of what we do beyond the classroom. As librarians increasingly move into instructional roles, it is important that they have grounding in instructional design research and theory in order to have the background to take a more systematic approach to instruction.

### **Summary**

Use of an instructional design model provides a systematic approach to accomplishing specific learning objectives. Design models often incorporate multiple theories of learning and are based in research and practice. Appropriate use of a well-designed model increases the chance that learning will occur in the instruction. While librarians have been providing instruction for decades, it has often been without the use of a model. As librarians become increasingly involved in providing instruction, it is important that they have a better understanding of instructional design and active learning techniques.

### **Review of Instructional Design Models for Information Literacy Instruction**

This section will provide a summary of instructional design models used for information literacy instruction and discuss the research literature related to the use of these models. Unfortunately there is not a significant amount of research literature which tests the effectiveness of these models, but the literature that is available will be discussed. In an ERIC report, Doyle (1994) provides an overview of all research conducted on design models to date with a focus on the K-12 environment. Loertscher

and Woolls provide an update of this review in 2002. Callison (2002) reviews the research literature related to the instructional role of the school media specialist. To date, these are the only significant reviews of the research literature related to instructional design for library/school media instruction. This review will examine the two major models—the Information Search Process model and the Big Six model. Additionally, this review will summarize other models which have little to no literature examining their effectiveness as well as problem-based learning which has much potential for information literacy instruction.

### **The Information Search Process Model**

The Information Search Process (ISP) model is based in research from Kuhlthau's dissertation (Kuhlthau, 1985) on the process of searching for information. The ISP model (Kuhlthau, 2004) looks at learning as a process in seven steps: task initiation, topic selection, prefocus exploration, focus formulation, information collection, search closure, and writing. Like the Big Six, this model can be presented to students in the form of a worksheet in order to go through each step of the research process. Of the models Joyce and Tallman (1997) reviewed, they stated that the ISP model was the only one based in research. Callison and Preddy (2006) point out that ISP has been tested more extensively than any other model to date.

The ISP model has been examined multiple times in the research literature. Much of the research to date has been conducted at least partly by the model's author and is often focused on the feelings of the subject when going through each step of the search process. Kuhlthau (1988) examined the use of ISP in a longitudinal study. Though the sample size was extremely small—only four students, surveyed in their senior year of

high school and again after four years of college—she did find that they took ownership of their information needs and demonstrated habitual approaches to searching. In an investigation funded by the U.S. Department of Education, Kuhlthau et al (1990) found that the model applied to school, public, and academic library environments. In their study of information seekers at 21 library sites in New Jersey, they found in a process survey and perceptions questionnaire that use of the model decreased uncertainty, confusion, and frustration, and the use of the model increased confidence, satisfaction, and relief in searching. Kuhlthau (1991) summarizes five studies of high school students' experiences in searching, concluding that students have a common user experience in searching and that the flow of feelings students experience when searching is consistent.

Kuhlthau et al (2008) examined the ISP model twenty years after its development. The authors interviewed a sample of 574 students in grades six through twelve about their feelings throughout using the ISP model in a collaborative inquiry assignment. The authors identified and tracked nine feelings: disappointment, frustration, confusion, uncertainty, anxiety, confidence, relief, optimism, and satisfaction. While the authors found that students had individual patterns of feelings, those feelings did follow a consistent progression when using the ISP model.

Others have conducted research related to ISP, notably Isbell & Kammerlocher, (1998) and Hyldegaard (2006). Isbell & Kammerlocher (1998) worked directly with Kuhlthau to conduct a pilot study to test the utility of using the ISP model at the library reference desk. Librarians recorded details about the search process on a form as they helped students through each step of the ISP process. At publication, the forms had not yet been analyzed, so ten reference librarians were interviewed regarding their

perceptions of using ISP at the reference desk. The librarians found the model useful in assisting students. However, they reported concerns with time constraints in using the model for each transaction, particularly if the reference desk was busy. The librarians were also concerned about how the model would work with students who were at the initial stage of the research process and were reluctant to make the effort to follow each step of the model.

Hyldegaard's (2006) case study examined the difference in using the ISP model as an individual versus using it in a group setting. Conducted over seven weeks, the study included two groups of information science students. Students were asked to keep a diary related to their research and were surveyed and interviewed. Hyldegaard (2006) found that both the individuals and the group had similar cognitive experiences in searching, though the group members reported more frustration with searching and did not feel the sense of relief that individuals reported.

### **The Big Six Model**

The Big Six model (Eisenberg & Berkowitz, 2011) is perhaps the most widely used information literacy instruction approach to date. First developed in 1987, this information problem solving model has been used for over twenty years in schools. The Big Six is a six stage process model focused on solving problems with information: task definition, information seeking strategies, location and access, use of information, synthesis, and evaluation. One of the model's strengths is its flexibility as it can be applied to all subjects, all ages, and across all grade levels. Eisenberg and Berkowitz (2011) stress that these activities should be integrated into the curriculum and not set apart as library instruction. Multiple handbooks and lesson plans have been developed

for use with the Big Six model. However, in practice, Silva (2011) points out that “decontextualized one-size-fits-all activities such as worksheets, quizzes, and multiple choice tests are often used with the Big Six model, which do not account for the epistemic differences of the disciplines, the rhetorical task and situation, students’ individual skill level and prior knowledge, and the affordances and limitations of the technological environment” (p. 20).

Two research studies evaluate some aspect of the use of the Big Six model. Chang (2007) developed a questionnaire for students to evaluate their understanding of each step of the Big Six model using Chang’s Big Six Information Problem Solving scale. The survey was administered to 1539 fifth and sixth graders in Taiwan. Based on student perceptions, Chang (2007) concluded that the scale was a reliable measure to assess student perceptions about the Big Six approach.

In another study using the Big Six model, Wolfe et al (2003) acknowledges that the library science literature has produced a strong body of anecdotal work, but there is little empirical research in general, particularly related to use of instructional design models such as the Big Six. Wolfe et al (2003) conducted a qualitative study of 18 eighth grade students using the Big Six model as a scaffold. Students were given instruction in using the Big Six model, provided worksheets and related information, and then were asked to research and write a news article related to the Civil Rights movement. In interviews and a post-survey, the authors found that students reported the Big Six to be a beneficial to conducting research.

## **Other Models**

No research literature was located which analyzes the effectiveness of other models. Some early models include Johnson (1981), Turner & Naumer (1983), Cleaver & Taylor (1983). Callison and Preddy (2006) describe a number of models though they only find three to be based in instructional design research: ASSURE (Smaldino et al, 2008), Helping Teachers Teach (Turner & Riedling, 2003), and Teaching Library Media Skills (Walker & Montgomery, 1983). The ASSURE model aligns with NETS-T and NETS-S standards and works well with instruction focused on visual literacy (Neuman, 2011a). Loertscher and Woolls (2002) suggest that the first information literacy design model to be published in the United States was the REACTS model (Stripling & Pitts, 1988). Three modified ADDIE models were developed for use in academic libraries: BLAAM (Bell & Shank, 2007), the USER method (Booth, 2011) and an enhanced ADDIE model (Farmer, 2011).

## **Problem-Based Learning**

Problem-based learning (PBL) is increasingly being explored in the information literacy instruction literature. With its focus on the practical, PBL typically involves student groups investigating a real-world issue. This authentic learning experience can be engaging to the digital native (Prensky, 2001), and elements of working through addressing problems often requires the use of information literacy skills and/or library research. As with lifelong information skills, PBL requires students to “actively participate and take responsibility for their education” (Dodd, 2007). Similar to the library research process, a goal of PBL is that students should be able to define their information needs and find information using appropriate information resources as they



work through the problem solving process. Interestingly, these skills are congruent with the Association of College and Research Libraries information literacy standards (ACRL, 2000). It seems appropriate, then, that PBL should be considered as one possible approach to information literacy instruction.

While a number of articles in the literature describe PBL experiences in information literacy instruction, two studies in particular take a research approach to the value of PBL in developing information literacy skills (Dodd, 2007; Hsieh & Knight, 2008). Dodd (2007) considered the impact of PBL on how students find and use information through a student questionnaire as well as librarian and instructor interviews. The questionnaire was distributed to 162 undergraduate students in the veterinary medicine program at University College Dublin with 67% responding. Nearly all of the respondents considered information skills important for PBL, though 79% self-selected informational materials rather than relied on librarian/instructor pre-selected materials. The students did realize the importance of verification of information however, often stating that one cannot trust information sources found on the internet without evaluation. Overall the PBL curriculum has increased the need for information literacy skills and has made students in the program recognize the need for more library visits, for understanding how to use information resources, and for learning how to evaluate resources effectively (Dodd, 2007).

As one might expect, a PBL approach can magnify the need for information literacy skills, but what about the effectiveness of using PBL directly in an information literacy instruction program? Hsieh and Knight (2008) compared lecture-based learning (LBL) with PBL in a library instruction environment for first-year engineering students.

In the PBL module, student teams received a brief orientation and were then presented with a real life problem and asked to play out the scenario and then report on their recommendations. The LBL module covered the same learning objectives through a presentation and worksheet with sample questions. At the end of both modules, the students were presented with an eleven question quiz and a reflective survey. While the LBL students scored slightly better on the quiz, the PBL students ranked their experience higher in the reflective survey. Neither was statistically significant, though the study suggests that more research should be conducted in this area. As students stated that PBL made the experience more interesting and encouraged them to participate, use of the PBL method in information literacy instruction warrants further exploration as an approach to information literacy skills instruction.

### **Summary**

Both Big Six and ISP have long been used by school media specialists, but “neither connect learning to information seeking and both are still primary information seeking models rather than learning models” (Neuman, 2011b, p. 24). Several other instructional design models have been developed for information literacy instruction, though little research literature has evaluated the effectiveness of any of these models. This raises the question of why so many models for information literacy instruction exist but so few have been studied. In a review of forty design models, Andrews and Goodson (1980) describe some reasons for model proliferation. One is that the instructor may feel that the instructional need is a special circumstance that a previous model will not address. Other reasons may include a lack of documentation describing the model’s use or the model may have “a weak or nonexistent theory base” (p. 162). Based on the

current research literature surrounding existing instructional design models for information literacy instruction, these reasons describe why a new design model is needed for information literacy instruction, one based in instructional design and information science research and theory.

### **Intersection of Instructional Design and Information Literacy**

This review first defined information literacy, described its purpose and the need for instruction to develop information literacy skills. Next, described in this review were the need for a design model and a discussion of design models used previously for the development of information literacy skills. This section will bring together both fields— instructional design and library/information literacy instruction—describing the intersections between the two, with a focus on the role of the librarian as instructional consultant, and will offer suggestions for future directions.

The history of school media and instructional design has intertwined multiple times over the last fifty years (Small, 1997). School libraries were first established in the United States in the early 1900s, and the first standards for their operation and use were developed in the 1960s. The 1960 AASL Standards for School Libraries included references to audio-visual materials and described the instructional role of the school library. As school librarians began taking on a greater role with audio-visual materials, more of them began participating in Association for Educational Communications and Technology (AECT) activities, particularly those who saw the increasing need for school librarians to play a greater instructional role in the schools. The majority of school librarians continued to be involved in AASL activities, but those who were also involved

in AECT helped to write some groundbreaking documents during this period (Saettler, 1990).

As the media role became more defined and the instructional role more discussed, AASL members began working more with AECT as well; in 1969, the “library girls and AV boys” (Neuman, 2004) wrote a set of joint guidelines for the school library with a revised version in 1975. This cooperation increased with the landmark publication, *Information Power*, in 1988 which was jointly written by members of AASL and AECT. Neuman (2000) describes *Information Power* as the first set of school media center guidelines which focused on the media center as a tool for learning and included specific learning outcomes for media center use. She described it as “a stunning innovation on the field's national guidelines and a direct and purposeful call to library media specialists to adopt a new and greatly enlarged role within their schools” (Neuman, 2004, p. 504).

Perhaps the most provocative aspect of this publication was the description of the school media specialist as an “instructional consultant” with a strong background in instructional design as well as an expert in information services. This “instructional consultant” role did not appear in a vacuum, as many writing around that time described this as an appropriate extension of the role of the school media specialist. Chisholm & Ely (1979) argued that the role of the librarian in instruction would be essential in the future: “library media professionals must become informed and involved in the ID process for in many cases it means survival. The process of instruction will continue into the future and those who are active in its design are those who will survive” (p. 6). Baumbach (1991) described the changing role of the school media specialist in 1980s as having a greater instructional role or desire for one at least. Both Craver (1990) and

Turner and Zsiray (1989) summarized the literature describing the role of the school media specialist as an instructional consultant. Loertscher (1982) touted the role of an instructional designer as the “second revolution” for the library media center. In his 11-level schema describing the role of the school media specialist, the top three levels were focused on instructional design. During this period, several models were developed for library skills instruction (Turner & Naumer, 1983; Cleaver & Taylor, 1983; Johnson, 1981) as well as two taxonomies for school media specialist involvement in instructional development in the schools (Turner, 1985; Loertscher, 1988).

For over forty years, the changing role of the librarian and the importance of the librarian taking a greater instructional role has been described in the literature. Dale (1969) suggested that the school media center could be more than a place for picking up materials and that the media specialist could take a greater role in learning. Chisholm and Ely (1979) pointed out: “The days of preparing a bibliography and selecting a few items off the shelf which might add to the course are gone. The proactive library media professional is a co-equal member of curriculum and instruction design teams, and as such, must be prepared to assume new responsibilities and roles far beyond those which have been traditionally followed” (p. 7). Cleaver and Taylor (1983) suggested the media specialist should move from a traditional role to taking a more active role in the classroom and provide greater leadership in curriculum development. Breivik and Gee (1989) pointed out the importance of including librarians in teaching the research process. Neuman (2011b) points out the value that a school media specialist (or librarian) can provide to teaching information skills:

“Not only do media specialists understand how to help students access and evaluate information, they understand that information itself is the basic

building block for meaningful learning in the twenty-first century. This understanding makes them unique in schools, and it makes them indispensable in helping students understand how to use information wisely and well to make sense of their world—that is, to learn” (Neuman , 2011b, p. 22).

While the inclusion of the term “instructional consultant” in *Information Power* (AASL/AECT, 1988) was forward-thinking—in fact, school media specialists and librarians today still desire yet struggle to play a greater role in classroom instruction—this was not well-received, and the term in the 1998 revision of *Information Power* was changed to “instructional partner” largely due to the field’s issues with the term “consultant” (Neuman, 2004). The term “partner” implies a more collaborative and equal relationship, whereas the connotation of “consultant” might imply the media specialist has a greater role than the instructor. The 1998 revision also included an increased focus on administrative activities—supervision, budgeting, and other management activities—as well as traditional information service activities. The “instructional partner” role is one that librarians in P-20 still strive for today.

*Information Power* (AASL/AECT, 1998) was the last major standards document written jointly by AECT and AASL members. *Information Power* includes nine standards and 29 indicators for student learning. The nine standards for information literacy skills are grounded in research and were validated by a Delphi study (Marcoux, 1999). Other standards documents for school media centers have since been published, but this was the last major collaboration to date between library and instructional design professionals.

Changes in technology and information seeking behavior over the last forty years have made essential the need for the librarian to move from passive provider of

information to active information skills instructor. Despite this need for change, Neuman (2004) argued that not enough research had been done linking student achievement to school media center (or library) use and that a new conceptual framework is necessary for information literacy instruction. This researcher would argue that her 2011 instructional design model focused on locating, evaluating, and using information effectively is just that. The next section of this review will describe the model and make the case that it is an ideal merging of instructional design theory and information theory and needs to be further examined and tested to determine its impact on student learning.

### **The I-LEARN Model**

I-LEARN (Neuman, 2011a) is an instructional design model connecting information science and instructional design. Neuman has written a number of articles on using instructional design to improve library database interfaces (1991, 1995) as well as the need for instructional design to better inform library instruction practices (1997, 2000, 2001, 2003, 2011a, 2011b). Like others (Breivik & Gee, 1989; Bell & Shank, 2007 and so forth) she argues that information literacy skills must be integrated into the curriculum. They are more than just library skills; they are essential skills for learning at all levels and cannot be taught in a vacuum. Neuman describes this in some detail in an article describing the history and value of the school media center (Neuman, 2004).

Library science and instructional design are complementary, and Neuman presents her I-LEARN model which is an instructional design model focused on information use (Neuman, 2011a). The model is not solely a library skills model; it is a learning model which could be applied in a variety of situations focused in nearly any

subject. She makes the case that the fields of library science and instructional design both contribute to learning with information.

Grounded in instructional design research and theories of cognitive science, the model's central premise is that information is the basic building block of all learning and that use of information is learning. Simply put, learning is the central reason for seeking information in the first place. She describes the work of a number of prominent researchers in information science theory (Marchioni, 2005; Kuhlthau, 2004) and uses Anderson and Krathwohl's (2001) revised Bloom's Taxonomy as the underlying framework. The framework includes the following components: remember, understand, apply, analyze, evaluate, and create. The model differs from other models described in this review in that it assumes a much greater definition of information; she argues that the world is full of information in all formats, is "complex and messy," and is the basic foundation of all learning. Hence the need for a model based in information science theory as well as instructional design theory.

Perhaps the greatest difference between I-LEARN and other models is that it focuses on information use, something which is usually outside the reach of the librarian or school media specialist. These two aspects in particular set it apart from the Big Six model (Eisenberg & Berkowitz, 2011), the ISP model (Kuhlthau, 2004), and others. While the Big Six and ISP models have been popular for many years, they focus primarily on locating and evaluating information, not its use. Doyle (1994) points out that information use is the most important step in building information literacy skills. In 1979, Chisholm and Ely described the librarian's focus on the three Rs: the right material to the right place at the right time. They argued that the time has come for the fourth R:



how to use the information in the right way. Information use is central to I-LEARN, and so is learning itself. Neuman describes the model not as a library model so much as a learning model. The focus on learning is another key aspect of the model that sets it apart from others.

The I-LEARN model includes six elements:

**Identify** an information problem by activating an interest, scanning the environment, and focusing on a question

**Locate** the needed information through searching and extracting the relevant information

**Evaluating** that information through questioning its authority, relevance, and timeliness

**Applying** that information to the question thorough organizing and communicating

**Reflecting** on what is found and revising as needed

**kNowing** through personalizing and internalizing the information (Neuman, 2011a)

The model is recursive, flexible and can be used in any information setting. The model maps to both the current AASL standards (AASL, 2007) as well as the ACRL standards, (ACRL, 2000) which were developed on the heels of the second set of *Information Power* standards. The model is promising, and the next step is to test the model in order to determine its impact on student learning. Given the proliferation of information and the lifelong importance of information literacy skills, there is a need to determine if instruction designed with the model will help students locate, evaluate, and use information more effectively than through current methods of providing information literacy skills instruction.

### **General Summary**

This review first defined information literacy, described its history and value, and the need for information literacy skills instruction. Information literacy can be defined in

multiple ways, though most definitions describe it as encompassing the skills of locating, evaluating, and using needed information effectively. Information literacy skills are essential for lifelong learning, through all levels of schooling, in the workplace, and in daily life decisions. While librarians have provided this or related types of instruction for decades, the need for information literacy instruction is increasing as information becomes more available outside of libraries and other academic settings.

Next, the need for an instructional design model in order to design information literacy instruction was described in this review. Use of an instructional design model provides a systematic approach to accomplishing specific learning objectives. Design models often incorporate multiple theories of learning and are based in research and practice. Appropriate use of a well-designed model increases the chance that learning will occur in the instruction. While librarians have been providing instruction for decades, it has often been without the use of a model. As librarians become increasingly involved in providing instruction, it is important that they have a better understanding of instructional design.

Design models that have been used previously in information literacy skills instruction were then examined in this review. Several models exist which are focused on information literacy skills instruction, and the ISP model and the Big Six model were discussed in detail. These models were discussed as they are the most frequently used to date, and some research has been conducted to evaluate the effectiveness of these models.

Finally, the intersection of the two fields of instructional design and library/information science were described, including a new instructional design model, I-LEARN, which builds on research and theory to bridge both fields. Built upon years of

collaboration and intersection between the fields of instructional design and library/information science, the I-LEARN model discussed in this review is focused in information science and instructional design theory. In addition to its strong theoretical foundation from both fields, what also sets the I-LEARN model apart from others is that its core is information, the building block of all learning, and it is focused primarily on information use and learning. The model is ideal for use in information literacy instruction and needs to be tested and further examined to determine its impact on student learning.

### **Implications from the Literature for this Research**

To date, the literature includes few experimental research studies focused on the use of an instructional design model to facilitate student learning of information literacy skills. Kuhlthau's ISP model (2004) has been examined in original research as described in this review; Callison and Preddy (2006) point out that ISP has been tested more extensively than any other model to date. Much of the research done has been conducted at least partly by the model's author and is often focused on the feelings of the subject when going through each step of the search process (Kuhlthau, 1988; Kuhlthau et al, 1990; Kuhlthau, 1991; Kuhlthau et al, 2008; Hyldegaard, 2006). This is useful in considering student attitudes toward information seeking; however, it is not specifically tied to student learning. Likewise, the Big Six (Eisenberg & Berkowitz, 2011) model has been examined through some original research, though it too is focused on student perceptions (Wolfe et al, 2003; Chang, 2007).

As described in this review, numerous models for information literacy instruction exist, but aside from the ISP model and the Big Six model, none have been tested to

determine their impact on student learning. This raises the question of why so many models for information literacy instruction exist and continue to be developed, but so few have been studied. Andrews and Goodson (1980) describe some reasons for model proliferation, suggesting that new models may be developed because the instructional need is a special circumstance that a previous model will not address. Other reasons may include a lack of documentation describing the model's use or the model may have "a weak or nonexistent theory base" (p. 162). The reasons presented by Andrews and Goodson (1980) apply directly to the proliferation of models without adequate testing and support why a new model is needed. Based on the current research literature surrounding existing instructional design models for information literacy instruction, these reasons describe why a new design model is needed for information literacy instruction and why the model needs to be studied to examine its role in student learning.

The culmination of years of collaboration and intersection between the fields of instructional design and library/information science, the I-LEARN model discussed in this review is built upon information science and instructional design theory and practice. In addition to its strong theoretical foundation from both fields, what also sets the I-LEARN model apart from others is that its core is information, the building block of all learning, and the model is focused primarily on information use and learning. To date, I-LEARN is the only learning-focused model for information literacy skills instruction. While Big Six and ISP have long been used by school media specialists and the existing research literature is focused on those two models, "neither connect learning to information seeking and both are still primary information seeking models rather than learning models" (Neuman, 2011b, p. 24).

The I-LEARN model needs to be tested to evaluate its impact on student learning of information literacy skills. Its theoretical foundations imply that the I-LEARN model would be ideal for designing information literacy instruction. The primary purpose of this study is to determine if information literacy skills instruction designed using the I-LEARN model will increase student understanding and application of information literacy concepts as compared to how librarians currently provide information literacy skills instruction. If students are given instruction designed with the I-LEARN model, will students learn how to locate, evaluate, and use information? This study will address two fundamental questions. Does instruction designed with the I-LEARN model increase student understanding of the steps and procedure necessary to locate and evaluate information? Does instruction designed with the I-LEARN model increase student ability to select appropriate information resources for a given assignment to write a research paper? The next step is to test the model in order to determine its impact on student learning relative to how librarians currently provide information literacy skills instruction. There is a need to determine if instruction designed with the model will help students locate, evaluate, and use information.

## CHAPTER THREE

### Methodology

This is a study to determine if information literacy skills instruction designed using the I-LEARN model will increase student understanding and application of information literacy concepts in an academic library setting. This chapter addresses research questions, hypotheses, participants, treatments, instrumentation, procedures, design, and data analysis methods.

### Research Questions

The two research questions for this study are:

**Question 1:** Does instruction designed with the I-LEARN model increase student understanding of the steps and procedure necessary to locate and evaluate information?

**Question 2:** Does instruction designed with the I-LEARN model increase student ability to select appropriate information resources for a given assignment to write a research paper?

### Hypotheses

The two hypotheses to be tested in this study are:

**Hypothesis 1:** Students who receive information literacy skills instruction designed with the I-LEARN model will perform significantly higher on the Information Literacy Skills Test that covers the steps and procedure necessary to locate and evaluate information compared to students who do not receive the instruction.

**Hypothesis 2:** Students who receive information literacy skills instruction designed with the I-LEARN model will perform significantly higher on the Citation Analysis Rubric than students who do not receive the instruction.

## **Participants**

This research was conducted at a large research university with a student body of approximately 29,000 in the southeastern United States. Participants in this research included undergraduate students enrolled in a composition and communications course. The course is required for all undergraduate students as part of the university's general education curriculum, and approximately 70 sections of the course are taught each semester. Librarians offer information literacy skills instruction to sections of the course upon faculty request, and students have access to a library research guide tailored to the needs of the course.

## **Instrumentation**

The following instruments were used in this research:

### **Information Literacy Skills Test**

The Information Literacy Skills Test (Appendix A) consists of twenty multiple choice items to gauge participant understanding of how to locate and evaluate information. Items topics include: choosing a topic, finding background information, selecting keywords, choosing tools to locate information, evaluating information, and applying information to an assignment. The Information Literacy Skills Test was administered to participants one week prior to the in-person instruction and two weeks following the in-person instruction. The instruments distributed are slightly different in that the Pre Test (Appendix A) includes more demographic data items than then Post Test (Appendix B), but the test items are the same.

### **Citation Analysis Rubric**

The Citation Analysis Rubric (Appendix C) was used to evaluate the information resources participants selected for their class assignment. Each citation was scored based on the rubric. The rubric includes a 1-4 scale for three items: authority, relevance, and timeliness. Authority refers to the author(s)' credentials, relevance describes the relevance of the information resource to the topic, and timeliness refers to choosing a source published at an appropriate time to address the topic. Each citation was evaluated using this rubric and a score was assigned to each item based on the rubric's four point scale.

### **Participant Survey**

The Participant Survey (Appendix D) was given to participants upon submission of their assignment and includes items gauging use of the library research guide, participant attitudes, and perceived value of the in-person instruction.

### **Library Research Guide Usage Tracking**

Usage of the library research guides for each group of participants was tracked using the library research guide software. Tracking was not available for individual participants, but total hits per guide are available. While this is a crude measure, it provides some data regarding use of the guides.

### **Treatments**

This experimental research involves two groups: the experimental group (Treatment 1: I-LEARN Instruction) and the control group (Treatment 2: Standard Instruction). The experimental group (I-LEARN Instruction) received information literacy skills instruction conducted by the researcher in a single 50 minute class period



designed using the I-LEARN model (Appendix E). While 50 minutes may seem to be a short duration for an instructional session, information literacy instruction is typically taught in a single, one-shot class period as described in Chapter Two. Participants in the experimental group (I-LEARN Instruction) had access to a library research guide (Appendix F) designed using the I-LEARN model.

The control group (Standard Instruction) also received information literacy skills instruction conducted by the researcher in a single 50 minute class period though the instruction was designed using typical academic library information literacy skills instruction practices (Appendix G), addressing learning outcomes described in the ACRL Information Literacy Competency standards (ACRL, 2000) and designed using the model from Morrison, Ross, and Kemp (2006). Participants in the control group had access to a library research guide (Appendix H) which addresses the ACRL (2000) information literacy competency standards.

The experimental group (I-LEARN Instruction) and the control group (Standard Instruction) were tested with the same Information Literacy Skills Test instrument one week prior to the in-person instruction (Appendix A) and two weeks following the in-person instruction (Appendix B). The information resources participants selected for their class assignment were evaluated using the same Citation Analysis Rubric (Appendix C). The experimental (I-LEARN Instruction) and control (Standard Instruction) groups were composed of seven sections of a composition and communication course: four sections for the experimental and three sections for the control. The seven sections were the only sections available to the researcher, and these intact groups were randomly

assigned as experimental or control with a randomization procedure using STATA software.

The experimental group had access to a library research guide designed using the I-LEARN model as a framework (Appendix F) and the control group had access to a library research guide using the ACRL Information Literacy Competency Standards (2000) as a framework (Appendix H). Library research guides are created for students to use independently to conduct library research and are built on a platform called LibGuides which was developed in 2007. Over 3,400 libraries worldwide use this platform to develop library research guides which connect students to library resources and information about locating and evaluating information resources (Springshare, 2012). As librarians cannot provide in-person instruction for every section of every course, library research guides are often used as a supplement or even a substitute for in-person instruction.

### **Treatment 1 (Experimental Group - I-LEARN Instruction)**

In a single 50 minute class period, the researcher taught an information literacy skills instruction session using the I-LEARN model as the framework for the session as outlined in Appendix E. The first 20 minutes of the session included the same content that the control group (Standard Instruction) received, focusing on identifying and locating needed information. In the experimental group, the next 30 minutes of the session focused on the steps of evaluating, applying, and reflecting on the information to foster learning. The researcher used the library research guide designed using I-LEARN as a framework (Appendix F) which was available to participants after the session. The guide includes selected databases, reference books, and other information resources

appropriate for the assignment as well as a checklist for evaluation of information resources. The presentation of the information on the library research guide was designed using the I-LEARN model as a framework

### **Treatment 2 (Control Group - Standard Instruction)**

In a single 50 minute class period, the researcher taught an information literacy skills instruction session designed following Morrison, Ross, and Kemp (2006) as outlined in Appendix G. The first 20 minutes of the session included the same content that the experimental group (I-LEARN Instruction) received, focusing on identifying and locating needed information. In the control group, the next 30 minutes of the session focused on hands-on practice of the skills learned in the first part of the session, a common information literacy instruction session strategy. The researcher used the library research guide (Appendix H) designed using the ACRL (2000) information literacy competency standards as a framework. The guide includes selected databases, reference books, and other information resources appropriate for the assignment as well as a checklist for evaluation of information resources. The presentation of the information on the library research guide was designed using the ACRL (2000) information literacy competency standards as a framework.

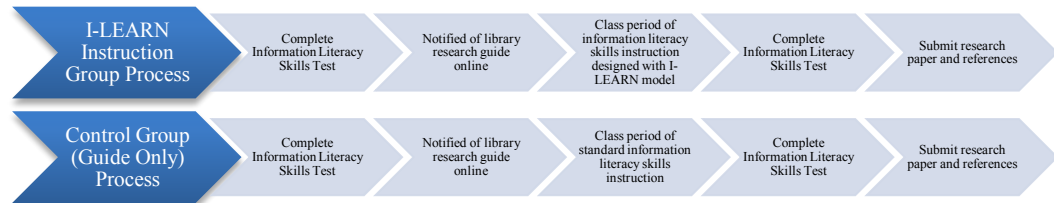
### **Procedures**

During Fall 2012, the researcher worked with instructors of the seven sections of the composition and communications course to plan specific procedures for instruction and data collection in Spring 2013. The sections were randomly assigned to experimental or control: four sections in the experimental group and three sections in the control group. These were the only sections available to the researcher. In January 2013, students in

each section were given the opportunity to participate in the research, and upon signing the consent form, completed the Information Literacy Skills Pre-Test. The library research guide appropriate for each group was then made available to each section via electronic communication and an in-class announcement. The URL for each group's research guide was not made available to anyone outside the group, and the guide was not findable via the library website or an internet search. Participants were asked to include the last four digits of their phone number on the Information Literacy Pre-Test, Post-Test, Participant Survey, and their assignment. This was the only identifier on these items, and it was used to track their responses across the study.

In late January-early February 2013, each section attended one class period devoted to information literacy skills instruction. The researcher presented each session following the appropriate outline (Appendix E and Appendix G) to keep the structure and content as similar between sections as possible. Approximately two weeks later, each section completed the Information Literacy Skills Post-Test. Students submitted their class assignments in late February-early March 2013. The researcher received copies of these assignments to conduct the citation analysis. The researcher examined the references in each assignment, scoring them for authority, relevance, and timeliness using the Citation Analysis Rubric (Appendix C). The only identification on the assignments was the last four digits of the participant's phone number which was used for tracking, so the researcher did not know which section a given assignment was from at the time of scoring. This helped to reduce any bias from the researcher scoring the assignments. The Participant Survey (Appendix D) was given to participants in late February-early

March 2013 and includes items gauging student use of the library research guide as well as participant attitudes and perceived value of the in-person instruction.



*Figure 3.1* A Diagram Depicting Procedure for Conducting this Research.

## Design

This experimental research involved two groups: the experimental group (Treatment 1: I-LEARN Instruction) and the control group (Treatment 2: Standard Instruction). The experimental group (I-LEARN Instruction) received information literacy skills instruction conducted by the researcher in a single class period and had access to a library research guide. The control group (Standard Instruction) received information literacy skills instruction conducted by the researcher in a single class period and had access to a library research guide. The experimental group (I-LEARN Instruction) and the control group (Standard Instruction) were tested with the Information Literacy Skills Test instrument, and the information resources participants selected for their class assignments were evaluated using the Citation Analysis Rubric (Appendix C). The research design is illustrated in Table 1.

Table 3.1

*I-LEARN Instruction Research Design*

Group	Instruction Designed with I-LEARN model	Library Research Guide (online)	Information Literacy Skills (administered pre and post)	Citation Analysis Rubric
Experimental (I-LEARN Instruction)	X	X	O	O
Control (Standard Instruction)		X	O	O

**Data Analysis Methods**

Statistical analysis was used to test the hypothesis that students receiving instruction designed with the I-LEARN model will perform significantly higher on the Information Literacy Skills Test covering the steps and procedure necessary to locate and evaluate information than students who do not receive this instruction. A *t*-test was conducted on the difference scores to determine if students in the I-LEARN Instruction group score higher on the Information Literacy Skills Test than students in the control group (Standard Instruction).

A citation analysis was used to test the hypothesis that students who receive information literacy skills instruction designed with the I-LEARN model will select information resources for a given class assignment that are more authoritative, relevant, and timely than students who do not receive this instruction. Citation analysis is frequently used in evaluating student selection of information resources (Ackerson & Young, 1994; Clark & Chinburg, 2010; Clarke & Oppenheim, 2006; Davis & Cohen, 2001). The Citation Analysis Rubric (Appendix A) modeled from Reinsfelder (2012) was used to evaluate the information resources selected by students for their assignment.

The rubric includes a 1-4 scale for three items: authority, relevance, and timeliness. While additional criteria are sometimes used in rubrics for evaluating information resources, these three were used as they are specifically described in the I-LEARN model. Each citation was evaluated using this rubric and a score was assigned based on the rubric. A *t*-test was used to compare the means of the two groups to determine if students in the I-LEARN Instruction group scored significantly higher on their citations as scored with the Citation Analysis Rubric than students in the control group (Standard Instruction).

### **Summary**

This study will help determine if information literacy skills instruction designed using the I-LEARN model will increase student application of information literacy concepts. This chapter addressed research questions, hypotheses, participants, treatments, instrumentation, procedures, design, and data analysis methods. Does instruction designed with the I-LEARN model increase student understanding of the steps and procedure necessary to locate and evaluate information? Does instruction designed with the I-LEARN model increase student ability to select appropriate information resources for a given assignment to write a research paper? This study addresses both of those questions based on a comparison of two groups available for this experimental research.

## CHAPTER FOUR

### Results

The data presented in this chapter includes demographics of the participants, descriptive statistics, results of the hypothesis testing, and a summary of survey responses from participants. All statistical analyses were conducted using the Statistical Package for the Social Sciences 21.0.

The primary purpose of this study was to determine if information literacy skills instruction designed using the I-LEARN model increases student understanding and application of information literacy concepts as compared to how librarians currently provide information literacy skills instruction. The following hypotheses were tested in this study:

**Hypothesis 1:** Students who receive information literacy skills instruction designed with the I-LEARN model will perform significantly higher on the Information Literacy Skills Test that covers the steps and procedure necessary to locate and evaluate information compared to students who do not receive the instruction.

**Hypothesis 2:** Students who receive information literacy skills instruction designed with the I-LEARN model will perform significantly higher on the Citation Analysis Rubric than students who do not receive the instruction.

### Demographic Data

The study included 134 first-year undergraduate students enrolled in seven sections of the same composition and communications course. Of the 134 students enrolled, 112 attended the information literacy skills class session and completed the Information Literacy Skills Pre-Test, Information Literacy Skills Post-Test, and



Participant Survey. Of the 112 participants, 66 were female and 46 were male (Table 4.1).

*Table 4.1*

*Demographic Characteristics of Participants (N=112)*

		<i>N</i>	%
Gender	Female	66	58.9
	Male	46	41.1
Home State	Kentucky	73	65.2
	All other states	39	34.8
Age	18	71	63.4
	19	41	36.6
Major by College	Arts and Sciences	48	42.9
	Undecided	14	12.5
	Communications	10	8.9
	Education	10	8.9
	Business and Economics	6	5.4
	Engineering	6	5.4
	Nursing	5	4.5
	Health Sciences	4	3.6
	Agriculture	3	2.7
	Fine Arts	2	1.8
	Pharmacy	2	1.8
Social Work	2	1.8	

The majority were from Kentucky ( $N=73$ ) and nearly half had chosen majors within the College of Arts and Sciences ( $N=48$ ). At the large research university in the southeastern United States where this research was conducted, this demographic makeup is consistent with the freshman class. No demographic differences were found between the experimental and control groups.

## Descriptive Statistics

This section includes descriptive statistics of the data gathered for the Information Literacy Skills Test (Table 4.2), the Citation Analysis Rubric (Table 4.3), the number of Library Research Guide views (Figure 4.1), and the frequency of library use (Table 4.4).

Table 4.2

*Pre and Post Test Scores of Participants Classified by Group*

	Pre-Test Score		Post-Test Score		Difference Score		<i>N</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
I-LEARN Instruction	70.79	12.15	74.86	13.78	4.07	11.37	70
Standard Instruction	62.62	15.51	66.07	18.63	3.45	17.62	42

**I-LEARN Instruction.** This group had 70 participants. On the Information Literacy Skills Test, the group had a pre-test score of  $M=70.79$ ,  $SD=12.15$  and a post-test score of  $M=74.86$ ,  $SD=13.78$ . The difference score for this group was  $M=4.07$ ,  $SD=11.37$ . The citation analysis score for those who submitted their assignment online to the researcher ( $N=38$ ) was  $M=2.89$ ,  $SD=0.96$  on a four point scale.

Table 4.3

Citation Analysis Scores of Participants Classified by Group

	Citation Analysis Score		
	<i>M</i>	<i>SD</i>	<i>N</i>
I-LEARN Instruction	2.89	.96	38
Standard Instruction	2.92	.72	25

**Standard Instruction.** This group had 42 participants. On the Information Literacy Skills Test, the group had a pre-test score of  $M=62.62$ ,  $SD=15.51$  and a post-test score of  $M=66.07$ ,  $SD=18.63$ . The difference score for this group was  $M=3.45$ ,  $SD=17.62$ . The citation analysis score for those who submitted their assignment online to the researcher ( $N=25$ ) was  $M=2.92$ ,  $SD=0.72$  on a 4 point scale.

#### Number of Library Research Guides Views

Usage of the library research guides for each group of participants was tracked using the library research guide software. Tracking was not available for individual participants, but total hits per guide were available (Figure 4.1). This provides some data regarding use of the guides.

Table 4.4

Number of Library Research Guide Views, January – March 2013

Number of Guide Views	
I-LEARN Instruction (N=70)	678
Standard Instruction (N=42)	282

These usage figures show that the guide for the experimental group, I-LEARN Instruction (N=70), was viewed 678 times. The guide was viewed approximately 16 times per day during the period that participants were completing their assignments. Standard Instruction group participants (N=42) viewed their library research guide 282 times. The guide was viewed approximately 8 times per day during the period that participants were completing their assignments. There is no way to determine if all participants used the library research guide, though according to self reports, nearly all did (see Table 4.4).

### **Library Use In Person and Online**

Participants reported on their use of the library (both in-person and online) on the Information Literacy Skills Test pre- and post-test instruments. In the I-LEARN instruction group, 11 participants reported not using the library online, and in the Standard instruction group, 5 participants reported not using the library online. For both groups, this is an increase in using the library online.

Table 4.5

*Library Usage In Person and Online of Participants Classified by Group*

		Standard Instruction (N=42)	I-Learn Instruction (N=70)
Library Use			
Pre-Treatment	Daily	0	4
	More than once per week	8	8
	Once a week	3	3
	More than once a month	9	19
	Once a month	13	18
	Once a semester	8	15
	Never	1	3
Used Library Online			
Pre-Treatment	Yes	21	37
	No	21	33
Library Use			
Post-Treatment	Daily	1	3
	More than once per week	6	9
	Once a week	6	10
	More than once a month	9	12
	Once a month	10	18
	Once a semester	9	16
	Never	1	2
Used Library Online			
Post-Treatment	Yes	37	59
	No	5	11

Both groups were consistent in their use of the library in-person as reported on the pre- and post-test instruments.

### **Reliability**

Cronbach's Alpha was run on the Information Literacy Skills Pre- and Post-Test items. The result of .79 indicates a fairly high level of internal consistency for the test instruments.

## Test of Hypotheses

This section describes tests of Hypothesis 1 and Hypothesis 2.

### Test of Hypothesis 1

The first hypothesis tested was as follows: “Students who receive information literacy skills instruction designed with the I-LEARN model will perform significantly higher on the Information Literacy Skills Test that covers the steps and procedure necessary to locate and evaluate information compared to students who do not receive the instruction.”

In order to test the hypothesis, a *t*-test was performed. Prior to conducting the *t*-test, Levene’s Test for Equality of Variances was conducted. Based on the result ( $F(1,110) = 2.08, p = 0.15$ ), equal variances were assumed. The test of the primary hypothesis that students who receive information literacy instruction designed with the I-LEARN model ( $M=4.07, SD=11.37$ ) will perform significantly higher on the Information Literacy Skills Test compared to students who received the standard instruction ( $M=3.45, SD=17.62$ ) did not yield a significant difference ( $t(110) = 0.23, p = 0.82$ ). Thus the hypothesis is not supported.

### Test of Hypothesis 2

The second hypothesis tested was as follows: “Students who receive information literacy skills instruction designed with the I-LEARN model will perform significantly higher on the Citation Analysis Rubric than students who do not receive the instruction.”

In order to test the hypothesis, a *t*-test was performed. Prior to conducting the *t*-test, Levene’s Test for Equality of Variances was conducted. Based on the result ( $F(1,61) = 2.41, p = 0.13$ ), equal variances were assumed. The test of the primary hypothesis that

students who receive information literacy instruction designed with the I-LEARN model ( $M=2.89$ ,  $SD=0.96$ ) will perform significantly higher on the Citation Analysis Rubric compared to students who received the standard instruction ( $M=2.92$ ,  $SD=0.72$ ) did not yield a significant difference ( $t(61) = 0.13$ ,  $p = 0.89$ ). Thus the hypothesis is not supported.

### **Secondary Data Analysis**

Given that there were no differences found in either hypothesis test, additional tests were completed in order to determine if additional trends or findings in the data could be reported. On the Information Literacy Post-Test, the majority of students gave incorrect answers to questions 4, 5, and 18, despite largely getting those items correct on the Information Literacy Skills Pre-Test. Leaving out those three questions failed to yield a significant difference.

To see if any further insight could be gained, additional analysis was conducted. The questions on the Information Literacy Skills Test measure specific steps in the information literacy process and map to four learning outcomes. Testing only the items from a single step in the process or from a single learning outcome failed to yield a significant difference.

### **Summary of Results of Participant Survey**

Participants were given a ten item scaled survey rating their experience with the instruction and the library research guide as well items gauging use of the library research guide, participant attitudes, and perceived value of the in-person instruction. The Participant Survey included two open-ended questions to provide participants with the

opportunity to elaborate on their responses. Most participants agreed with all of the statements in the Participant Survey (see Table 4.6).

Looking across both groups, there were no striking differences in responses. Of the participants ( $N=112$ ), 94 agreed or strongly agreed that using the library research guide made it easier to find information resources for their assignment, 90 agreed or strongly agreed that they developed a better understanding of the research process after participating in the information literacy instruction session, 90 agreed or strongly agreed that information from the information literacy instruction session and library research guide will help them academically in the future, 88 indicated that they will use the library research guide for assignments in other classes, and 84 indicated that they will use what they learned from the information literacy instruction session for assignments in other classes. Only three participants felt that the information literacy instruction session was not a good use of class time.

Additionally, the Participant Survey included two open-ended items. Of the 57 participants who completed the open-ended items, 39 described the information literacy instruction session as helpful, and 26 participants offered a specific suggestion to improve the session or the library research guide for the future, with nine stating that the amount of time spent on information literacy instruction during the semester needed to be increased. Most of those respondents suggested that at least two class periods be devoted to library research. Five participants specifically described using the library research guide for an assignment in another course. Only three participants commented negatively on the information literacy instruction session, describing it as boring or a waste of class time.



*Table 4.6*  
*Participant Survey Responses by Group*

	Strongly Agree		Agree		Neither Agree nor Disagree		Disagree		Strongly Disagree	
	S	I	S	I	S	I	S	I	S	I
	<hr/>									
1. I used the library research guide to help me in the research process for my project.	6	15	31	45	3	5	2	5	0	0
2. I developed a better understanding of the library research process after participating in the library instruction session.	6	8	27	49	4	8	1	5	1	0
3. The library research guide made it easier to find information resources for my paper.	10	16	27	41	4	10	1	2	0	0
4. As I worked on my paper, I thought about concepts I learned from the library research guide and the library instruction session.	5	6	22	44	11	14	4	6	0	0
5. The library instruction session was a good use of class time.	6	14	21	31	10	23	1	0	0	2
6. I will use information resources from the library research guide for assignments in other classes.	10	19	23	36	7	8	2	6	0	0
7. Information from the library instruction session and library research guide will help me academically.	7	17	27	39	7	13	0	1	0	0
8. I will use what I learned from the library instruction session for assignments in other classes.	7	18	23	36	8	11	1	5	0	0
9. Concepts covered in the library instruction session or on the library research guide were integrated into class.	4	10	24	39	10	18	2	3	0	0
10. What I learned in the library instruction session was reinforced in class.	3	8	22	34	9	23	4	5	0	0

*Note.* S denotes Standard Instruction ( $N=42$ ) and I denotes I-LEARN Instruction ( $N=70$ ).

## Summary

In this chapter, the data presented included demographics of the participants, descriptive statistics, results of the hypothesis testing, and the responses collected from the Participant Survey.

The results of the test of Hypothesis 1 does not support the hypothesis that students who receive information literacy skills instruction designed with the I-LEARN model will perform significantly higher on the Information Literacy Skills Test that covers the steps and procedure necessary to locate and evaluate information compared to students who do not receive the instruction. There was no significant difference in the pre- and post-test difference scores between the I-LEARN Instruction group and the Standard Instruction group. Therefore, participants who received the I-LEARN instruction did not score significantly higher on the Information Literacy Skills Test than participants in the Standard Instruction Group.

The results of the test of Hypothesis 2 does not support the hypothesis that students who receive information literacy skills instruction designed with the I-LEARN model will perform significantly higher on the Citation Analysis Rubric than students who do not receive the instruction. There was no significant difference in the Citation Analysis Rubric scores between the I-LEARN Instruction group and the Standard Instruction group. Therefore, participants who received the I-LEARN instruction did not receive a significantly higher score on the Citation Analysis Rubric than participants in the Standard Instruction Group.

Based on the results of the survey, the majority of participants were satisfied with the in-person instruction session and the library research guide. Students felt that the

instruction was a good use of class time, and the majority of students indicated they would be likely to use what was learned in other classes for future assignments.

## **CHAPTER FIVE**

### **Conclusion and Recommendations**

The primary purpose of this study was to determine if information literacy skills instruction designed using the I-LEARN model will increase student understanding and application of information literacy concepts as compared to how librarians currently provide information literacy skills instruction. Given the proliferation of information and the lifelong importance of information literacy skills, there is a need to determine if instruction designed with the model will help students locate, evaluate, and use information more effectively than through current methods of providing information literacy skills instruction. This chapter includes a summary of the study, a discussion of the results of the study, recommendations for future research, and an overall summary of the research.

### **Summary of the Study**

This experimental research involved two groups: the experimental group (Treatment 1: I-LEARN Instruction) and the control group (Treatment 2: Standard Instruction). The experimental group (I-LEARN Instruction) received information literacy skills instruction in a single class period and had access to a library research guide designed using the I-LEARN model. The control group (Standard Instruction) received information literacy skills instruction in a single class period and had access to a library research guide designed using a systems design model. The experimental group (I-LEARN Instruction) and the control group (Standard Instruction) were tested with the Information Literacy Skills Pre- and Post-Test instruments, and the information resources participants selected for their class assignments were evaluated using the Citation

Analysis Rubric (Appendix C). The Participant Survey (Appendix D) was given to participants upon submission of their assignment and included items gauging use of the library research guide, participant attitudes, and perceived value of the in-person instruction and library research guide. The following hypotheses were tested:

**Hypothesis 1:** Students who receive information literacy skills instruction designed with the I-LEARN model will perform significantly higher on the Information Literacy Skills Test that covers the steps and procedure necessary to locate and evaluate information compared to students who do not receive the instruction.

**Hypothesis 2:** Students who receive information literacy skills instruction designed with the I-LEARN model will perform significantly higher on the Citation Analysis Rubric than students who do not receive the instruction.

Based on the analysis of the data gathered, Hypothesis 1 was not confirmed. Participants who received information literacy skills instruction designed with the I-LEARN model did not perform significantly higher on the Information Literacy Skills Test compared to participants who received the standard instruction. The Information Literacy Skills Test difference score of those in the I-LEARN group ( $N=70$ ) was  $M=4.07$ ,  $SD=11.37$ , and the difference score for those in the standard instruction group ( $N=42$ ) was  $M=3.45$ ,  $SD=17.62$ . To see if any further insight could be gained in this study, additional analysis was conducted, though no significant difference was found in either analysis.

Based on the analysis of the data gathered, Hypothesis 2 was not confirmed. Participants who received information literacy skills instruction designed with the I-LEARN model did not perform significantly higher on the Citation Analysis Rubric than

participants who received the standard instruction. Both groups had similar rubric scores. The I-LEARN group's ( $N=70$ ) Citation Analysis Rubric score was  $M=2.89$ ,  $SD=.96$ , and the standard instruction group's ( $N=42$ ) Citation Analysis Rubric score was  $M=2.92$ ,  $SD=.72$ .

### **Discussion of Results of the Study**

Most participants in this research study described the information literacy instruction session as valuable and a good use of class time. Of the participants ( $N=112$ ) responding to the Participant Survey (Table 4.6), 90 agreed or strongly agreed that they developed a better understanding of the research process after participating in the information literacy instruction session and that information from the information literacy instruction session and library research guide would help them academically in the future. Survey results showed that 84 participants indicated that they will use what they learned from the information literacy instruction session for assignments in other classes. Of the 57 participants who completed the open-ended items, 39 specifically described the information literacy instruction session as helpful. This is consistent with the literature, as several have examined the value students place on information literacy skills instruction (Lebbin, 2006; Head & Eisenberg, 2010). Bowles-Terry (2012) conducted a series of focus groups where students described how valuable they found information literacy instruction sessions; additionally, Bowles-Terry found a significant difference in GPA for students who had an information literacy instruction session versus those who had not. Based on previous research and this research study, many students find information literacy instruction sessions to be helpful in developing research skills.

Participants also found the library research guide valuable, with 94 ( $N=112$ ) participants agreeing or strongly agreeing that using the library research guide made it easier to find information resources for their assignment. Of the participants, 88 indicated that they will use the library research guide for assignments in other classes. Using the I-LEARN model as a template made for an attractive and useful library research guide (Appendix F), and some of the faculty commented anecdotally on the value of organizing the library research guide by using the I-LEARN model as a template. In general, based on the literature (Mokia & Rolen, 2012) and on this research study, library research guides facilitate student information gathering, and perhaps a future study should examine I-LEARN specifically within the context of library research guide design and functionality.

Some participants recommended that they needed more time than one class period to help them in finding, evaluating, and using information sources, and 26 participants offered a specific suggestion to improve the session or the library research guide for the future, with nine stating that the amount of time spent on information literacy instruction during the semester needed to be increased. Most of those respondents suggested that at least two class periods be devoted to library research. This is consistent with the literature, as Booth (2011) and others agree that the single class period information literacy instruction session is not an ideal format. However, given that this is the format predominantly used in undergraduate information literacy skills instruction, the single class period format was used for this research study. While it is not an ideal format, it is often the only option available, so more studies need to be done to determine how best to

improve this limited format. Based on the literature and some participant perspectives in this study, the single class period instruction session is generally not an ideal format.

For many years, librarians have been making the case to faculty that information literacy instruction is important, and valuable class time should be allotted to it. The student participants in this research study suggested that more time is needed for information literacy instruction. Some of the literature from the faculty perspective supports this as well. Hoffman and Adams (2012) discuss the value of librarian-led information literacy instruction sessions from a faculty perspective. They found that students who received an information literacy instruction session were more confident in the classroom, and while test scores did not show it, they felt there was an impact on student learning as a result of the instruction. The students valued the instruction and felt that it helped them be more successful. Perhaps as more students make the case for the value of information literacy instruction, this will help faculty in making the decision to allow more class time for this activity. Several participants in this research study explicitly stated the need for more class time devoted to information literacy instruction, particularly in working with their team and the librarian to find credible sources to help in making their argument. Based on the literature and this research study, perhaps this student perspective can help support librarians in making the case to faculty that information literacy instruction is an important use of class time.

Based on this discussion of the results of this study, several general conclusions can be drawn. Many students find information literacy instruction sessions to be helpful in developing research skills. Online library research guides facilitate student information gathering, and students find them valuable in finding sources for their



assignments. In particular, the I-LEARN model is an attractive and helpful format for developing a library research guide. The single class period information literacy instruction session is generally not an ideal format, and perhaps students can help support librarians in making the case to faculty that additional time for information literacy instruction is needed.

### **Recommendations for Future Research**

While no statistically significant difference was found, participants who received the standard instruction did not perform as well on the Information Literacy Skills Test as participants who received the I-LEARN instruction. The Information Literacy Skills Test difference score of those in the I-LEARN group ( $N=70$ ) was  $M=4.07$ ,  $SD=11.37$ , and the difference score for those in the standard instruction group ( $N=42$ ) was  $M=3.45$ ,  $SD=17.62$ . The I-LEARN model is new, and at the time of this experiment, no examples of its use were available in the literature. This was one of the first times the model had been used in a real world setting, particularly in an academic library environment. As the I-LEARN instruction was the same as or slightly better than the standard instruction, this suggests that future study of the use of the I-LEARN model is needed.

What sets apart the I-LEARN model (Neuman, 2011a) from others is that it is built upon information science and instructional design theory and practice. In addition to its strong theoretical foundation from both fields, its core is information, the building block of all learning, and the model is focused primarily on information use and learning. The I-LEARN model includes the following components: identify, locate, evaluate, apply, reflect, and know. The model is not just a library skills model; it is a learning model which could be applied in a variety of situations focused in nearly any subject.

For a future study, it would be helpful for the librarian to work more closely with the faculty member on the class assignment. Kvenild and Calkins (2011) provide numerous examples of faculty-librarian partnerships in developing assignments and overall course planning. Meulemans and Carr (2013) provide a faculty perspective on building that partnership and describe the value of faculty-librarian partnerships in order to help students develop information literacy skills. This study was limited to a citation analysis of a single class assignment which is consistent with the assessment of information literacy instruction, but perhaps a future study might examine multiple assignments up to the final student product, such as an entire paper, in order to truly evaluate information use as well as the appropriateness of the sources used. This would provide additional insights into the effectiveness of the instruction, particularly when designing instruction using the I-LEARN model, as its focus is largely on information use.

While the single class period information literacy instruction session is standard, a future study should consider other options for duration of delivery. Van Epps and Nelson (2013) have taken an interesting approach to this by developing four twelve minute sessions which were given just before each assignment. When compared to students who had a single lecture rather than four lectures spaced around each assignment, they found a statistically significant difference in the quality of references used based on a rubric. This approach uses the same amount of class time, and it appears to be more effective. A future study might try a similar approach using the I-LEARN model. Perhaps each session could focus on one element of the I-LEARN model, and a library research guide

designed with the I-LEARN model would be used to provide continuity throughout the semester.

The I-LEARN model does lend itself to needing more time than a single class period information literacy instruction session; however, continuing to explore ways to improve the single class period information literacy instruction session is important as it is often the only time allotted for this instruction. To move beyond the single class period information literacy instruction session, perhaps a future study could examine the use of the I-LEARN model across an entire semester in a for-credit course. Mery, Newby, and Peng (2012) compared the test scores of students who had attended a one-shot, single class period information literacy instruction session and those who had participated in a for-credit course. They found that the students who participated in the for-credit course demonstrated significant improvement in their test scores compared to students who only received a single information literacy instruction session. Perhaps a future study could examine the benefits of a for-credit course designed using the I-LEARN model. This course might even be delivered online which would complement the increasing number of online courses available to students today and would help librarians in the future with scalability issues.

Participants in this study provided feedback describing the I-LEARN library research guide as a useful tool. Library research guides are developed for many courses and continue to be a popular format for providing information skills information. As more courses go online, the use of library research guides is increasing, particularly as face-to-face instruction becomes less feasible. A future study might consider the effectiveness of using the I-LEARN model as an online library research guide template.

Participants in the I-LEARN Instruction group ( $N=70$ ) viewed their library research guide 678 times, and participants in the Standard Instruction group ( $N=42$ ) viewed their library research guide 282 times. The guides were not published on the library website nor were they available via an internet search, so the views were exclusive to the appropriate group. Both groups needed to use the guide in order to access library resources. It is unclear why participants in the experimental group used the guide more often. Perhaps a future study could examine what about this design led participants to use the guide more frequently.

Finally, a future study might include more qualitative components in the research. Some questions arose as a result of this study. For students, what specifically did they find valuable about the in-person instruction and the library research guide designed using the I-LEARN model? For faculty, how might they consider integrating concepts from the I-LEARN model into their course? The student insights in the Participant Survey were invaluable, and perhaps focus groups could be conducted in a future study to better understand student preferences between use of one design model versus another. In this study, casual conversations with faculty suggested that they found the I-LEARN model approach to be useful, particularly in the design of the library research guide. A future study might include in-depth interviews with faculty, particularly if the study increases the duration of the treatment to a semester-long partnership with a faculty member.

### **General Summary and Conclusion**

The primary purpose of this study was to determine if information literacy skills instruction designed using the I-LEARN model would increase student understanding and

application of information literacy concepts as compared to how librarians currently provide information literacy skills instruction. This study did not show a significant difference between participants who received instruction designed with the I-LEARN model and participants who received the standard instruction. The Information Literacy Skills Test difference score of those in the I-LEARN group ( $N=70$ ) was  $M=4.07$ ,  $SD=11.37$ , and the difference score for those in the standard instruction group ( $N=42$ ) was  $M=3.45$ ,  $SD=17.62$ .

Participants who completed the Participant Survey found the instruction to be valuable and a good use of class time. They found the library research guide to be useful, and based upon hits to the guide and self reporting of usage, it appears that most participants did use the guide for their assignment. Several participants reported that they did not have enough time to work with their groups and the librarian on finding credible sources, and they suggested that future classes should be given more time for information literacy instruction. These student insights might help faculty see the value of using class time for an information literacy instruction session.

Several possibilities for future studies were presented. The librarian might work more closely with the faculty member on the assignment in order to better evaluate the use of information. Rather than a single class period information literacy instruction session, the librarian might break the session into four or more parts and present them at appropriate times throughout the semester. A future study might look at using the I-LEARN model to design a semester-long, for-credit information literacy skills course. Another study might consider the use of the I-LEARN model as a design template for library research guides to better understand the effectiveness of using the model in this

way. Finally, future studies might include more qualitative aspects to better understand faculty and student experiences in the use of the I-LEARN model. For example, how might faculty consider integrating concepts from the I-LEARN model into the course?

At the time of this experiment, no other examples of the use of the I-LEARN model were available in the literature. This study was one of the first times the model had been used in a real world setting, particularly in an academic library environment, and the result was that the I-LEARN instruction was as good as the standard instruction, if not slightly better, though no statistically significant difference was found. Built upon information science and instructional design theory and practice, the core of the I-LEARN model is information, the building block of all learning. The model is not just a library skills model; it is a learning model which could be applied in a variety of situations focused in nearly any subject. Use of the I-LEARN model is quite promising, and it needs to be examined in future studies.

## Appendix A

### Information Literacy Skills Pre-Test

This test was administered to the participants in both groups one week prior to the in-person instruction. The post-test (Appendix B) consists of the same items but includes less demographic data collection.

#### Information Literacy Skills Pre Test

Last four digits of your phone number \_\_\_\_\_

Gender \_\_\_\_\_

Age \_\_\_\_\_

Major \_\_\_\_\_

State/country of permanent residence \_\_\_\_\_

How often do you visit the library? (circle one)

Daily

More than once per week

Once a week

More than once a month

Once a month

Once a semester

Never

Do you use information resources in the library? (circle one)

Yes

No

Do you use information resources on the library website? (circle one)

Yes

No

**Please circle the BEST choice for the following items:**

1. Which of the following is a good practice for developing your search strategy?

A. Type your research question into Google

- B. Make a list of abbreviations and alternate spellings of search terms
  - C. Browse the current periodicals section
  - D. Type your research question into a library database
2. Which of the following is a topic suitable for a five page research paper?
- A. The environment
  - B. Environmental issues
  - C. Environmental issues in California
  - D. Impact of charging for plastic bags on the use of reusable grocery bags
3. If your keyword search “foreign policy United States” retrieves 923 results, what should you do next?
- A. Try the keyword search “United States foreign policy”
  - B. Add more terms to the search and try again
  - C. Scan the list to find the most relevant items
  - D. Try the search again with fewer terms
4. Of the following keyword examples, which would likely provide the best results in a database search when searching for the topic: “how does exposure to smokers affect children with asthma?”
- A. exposure smoke asthma
  - B. smoke affect children asthma
  - C. secondhand smoke children asthma
  - D. secondhand smoke asthma
5. If your assignment is to find scholarly journal articles about global warming, what should you do?
- A. Browse through the periodicals section until you find an article on that topic
  - B. Search InfoKat, the library catalog
  - C. Search journal article databases
  - D. Search on Google



6. Which of the following is an effective search strategy?
- A. Use phrases surrounded by quotation marks for more specific results
  - B. Search using capital letters for more emphasis
  - C. Look through every result you retrieve in order to choose the best one
  - D. Use just one search engine
7. Which would be the best source looking for current information about the price of oil?
- A. Journal article
  - B. Newspaper article
  - C. Book
  - D. Encyclopedia
8. The most helpful research strategy for locating additional information related to your topic is:
- A. Finding related sources using bibliographies of relevant sources
  - B. Scanning the newspaper headlines
  - C. Asking a friend for advice
  - D. Looking at Twitter
9. Which of the following would you find on the library's website?
- A. Access to electronic collections the library created or purchased
  - B. Hours, policies, and contact information for the library
  - C. Course guides that include links to recommended databases and other information resources
  - D. All of the above
10. Which of the following is NOT a Boolean search term?
- A. AND
  - B. NOT
  - C. HOW
  - D. OR

11. You are looking for information about the impact of having a job on college student grades. Which of the following searches would yield the MOST results?

- A. college students AND working AND grades
- B. (college students OR undergraduates) AND (work\* OR employment) AND (grades OR academic achievement)
- C. (college students OR undergraduates) AND working AND grades
- D. (college students AND undergraduates) AND (work\* AND employment) AND (grades AND academic achievement)

12. Which of the following is a primary source?

- A. Journal article
- B. Chapter in your textbook
- C. A Letter
- D. Scholarly book

13. Which search would retrieve the greatest number of items?

- A. Philosophy OR objectivism
- B. Philosophy AND objectivism
- C. Philosophy LIKE objectivism
- D. Philosophy NOT objectivism

14. Looking at a website from PETA (People for the Ethical Treatment of Animals), what should you consider most closely?

- A. Currency
- B. Bias
- C. Other links
- D. Presentation style

15. Where would you find peer reviewed articles?

- A. Popular magazines
- B. Newspapers

- C. Journals
- D. Almanacs

16. Which of the following is a recommended technique for evaluating information?
- A. Rely solely on author information provided from the source
  - B. If it has been published, it must be factual
  - C. Find out who published the information
  - D. Select only information that confirms your own opinion
17. How might you incorporate statistics into your paper?
- A. Ignore ones that don't agree with your point of view
  - B. List statistics in your paper with no context
  - C. Find some that seem to fit from a Google search
  - D. Describe them in your paper with context
18. Now that you have found your information sources, the next step is to:
- A. Use sources that are easiest to read
  - B. Name all of them in your references, even if you don't use them
  - C. Start working on your paper and fill in the gaps with quotes
  - D. Read your sources to see if you need to search for more information
19. After you have read an assigned reading for class, you have to write a one page paper about that reading. Which of the following is correct?
- A. Because the paper is so short, you don't have to cite the reading
  - B. If you don't plan to publish the paper, you don't have to cite the reading
  - C. You need to search a library database to find the full text of the reading so that you can cut and paste into your paper
  - D. Even though you are paraphrasing the content, you must cite the reading in your paper

20. When performing research, you should first:
- A. Locate books using the library's online catalog
  - B. Analyze your topic to identify broader and narrower terms and synonyms
  - C. Use a library database to find articles
  - D. Browse the shelves in the library

## Appendix B

### Information Literacy Skills Post-Test

This test was administered to the participants in both groups two weeks following the in-person instruction. The pre-test (Appendix A) consists of the same items but includes additional demographic data items.

### Information Literacy Skills Post Test

Last four digits of your phone number \_\_\_\_\_

How often do you visit the library? (circle one)

Daily

More than once per week

Once a week

More than once a month

Once a month

Once a semester

Never

Do you use information resources in the library? (circle one)

Yes

No

Do you use information resources on the library website? (circle one)

Yes

No

**Please circle the BEST choice for the following items:**

1. Which of the following is a good practice for developing your search strategy?
  - A. Type your research question into Google
  - B. Make a list of abbreviations and alternate spellings of search terms
  - C. Browse the current periodicals section
  - D. Type your research question into a library database

2. Which of the following is a topic suitable for a five page research paper?
  - A. The environment
  - B. Environmental issues
  - C. Environmental issues in California
  - D. Impact of charging for plastic bags on the use of reusable grocery bags
  
3. If your keyword search “foreign policy United States” retrieves 923 results, what should you do next?
  - A. Try the keyword search “United States foreign policy”
  - B. Add more terms to the search and try again
  - C. Scan the list to find the most relevant items
  - D. Try the search again with fewer terms
  
4. Of the following keyword examples, which would likely provide the best results in a database search when searching for the topic: “how does exposure to smokers affect children with asthma?”
  - A. exposure smoke asthma
  - B. smoke affect children asthma
  - C. secondhand smoke children asthma
  - D. secondhand smoke asthma
  
5. If your assignment is to find scholarly journal articles about global warming, what should you do?
  - A. Browse through the periodicals section until you find an article on that topic
  - B. Search InfoKat, the library catalog
  - C. Search journal article databases
  - D. Search on Google
  
6. Which of the following is an effective search strategy?
  - A. Use phrases surrounded by quotation marks for more specific results
  - B. Search using capital letters for more emphasis
  - C. Look through every result you retrieve in order to choose the best one

- D. Use just one search engine
7. Which would be the best source looking for current information about the price of oil?
- A. Journal article
  - B. Newspaper article
  - C. Book
  - D. Encyclopedia
8. The most helpful research strategy for locating additional information related to your topic is:
- A. Finding related sources using bibliographies of relevant sources
  - B. Scanning the newspaper headlines
  - C. Asking a friend for advice
  - D. Looking at Twitter
9. Which of the following would you find on the library's website?
- A. Access to electronic collections the library created or purchased
  - B. Hours, policies, and contact information for the library
  - C. Course guides that include links to recommended databases and other information resources
  - D. All of the above
10. Which of the following is NOT a Boolean search term?
- A. AND
  - B. NOT
  - C. HOW
  - D. OR
11. You are looking for information about the impact of having a job on college student grades. Which of the following searches would yield the MOST results?
- A. college students AND working AND grades

B. (college students OR undergraduates) AND (work\* OR employment) AND (grades OR academic achievement)

C. (college students OR undergraduates) AND working AND grades

D. (college students AND undergraduates) AND (work\* AND employment) AND (grades AND academic achievement)

12. Which of the following is a primary source?

A. Journal article

B. Chapter in your textbook

C. A Letter

D. Scholarly book

13. Which search would retrieve the greatest number of items?

A. Philosophy OR objectivism

B. Philosophy AND objectivism

C. Philosophy LIKE objectivism

D. Philosophy NOT objectivism

14. Looking at a website from PETA (People for the Ethical Treatment of Animals), what should you consider most closely?

A. Currency

B. Bias

C. Other links

D. Presentation style

15. Where would you find peer reviewed articles?

A. Popular magazines

B. Newspapers

C. Journals

D. Almanacs



16. Which of the following is a recommended technique for evaluating information?
- A. Rely solely on author information provided from the source
  - B. If it has been published, it must be factual
  - C. Find out who published the information
  - D. Select only information that confirms your own opinion
17. How might you incorporate statistics into your paper?
- A. Ignore ones that don't agree with your point of view
  - B. List statistics in your paper with no context
  - C. Find some that seem to fit from a Google search
  - D. Describe them in your paper with context
18. Now that you have found your information sources, the next step is to:
- A. Use sources that are easiest to read
  - B. Name all of them in your references, even if you don't use them
  - C. Start working on your paper and fill in the gaps with quotes
  - D. Read your sources to see if you need to search for more information
19. After you have read an assigned reading for class, you have to write a one page paper about that reading. Which of the following is correct?
- A. Because the paper is so short, you don't have to cite the reading
  - B. If you don't plan to publish the paper, you don't have to cite the reading
  - C. You need to search a library database to find the full text of the reading so that you can cut and paste into your paper
  - D. Even though you are paraphrasing the content, you must cite the reading in your paper
20. When performing research, you should first:
- A. Locate books using the library's online catalog
  - B. Analyze your topic to identify broader and narrower terms and synonyms
  - C. Use a library database to find articles
  - D. Browse the shelves in the library

## Appendix C

### Citation Analysis Rubric

The Citation Analysis Rubric was used to evaluate the information resources participants select for their paper assignment. Each citation was scored based on the rubric. Each citation was evaluated using this rubric and a score was assigned to each item based on the rubric's four point scale. Each participant received a total citation score.

**Last four digits of subject phone number** \_\_\_\_\_

Citation #	Authority	Relevance	Timeliness	Total
1				
2				
3				
4				
5				
Average				
			Total:	

#### Authority

- 1 No author identified
- 2 Publication of business or organization with possible bias
- 3 Popular or journalistic
- 4 Peer reviewed, scholarly, or government publication

#### Relevance

- 1 Not at all relevant to the topic
- 2 Partially relevant to the topic
- 3 Mostly relevant to the topic
- 4 Completely relevant to the topic

#### Timeliness

- 1 Outdated
- 2 No date indicated
- 3 Acceptable but need more timely sources to complement
- 4 Appropriate and timely

Adapted from Reinsfelder (2012)

## Appendix D

### Participant Survey

Last four digits of your phone number \_\_\_\_\_

Please circle the item which best describes your experience:

1. I used the library research guide to help me in the research process for my paper.

Strongly Agree   Agree   Neither Agree Nor Disagree   Disagree   Strongly Disagree

2. I developed a better understanding of the library research process after participating in the library instruction session.

Strongly Agree   Agree   Neither Agree Nor Disagree   Disagree   Strongly Disagree

3. The library research guide made it easier to find information resources for my paper.

Strongly Agree   Agree   Neither Agree Nor Disagree   Disagree   Strongly Disagree

4. As I worked on my paper, I thought about concepts I learned from the library research guide and the library instruction session.

Strongly Agree   Agree   Neither Agree Nor Disagree   Disagree   Strongly Disagree

5. The library instruction session was a good use of class time.

Strongly Agree   Agree   Neither Agree Nor Disagree   Disagree   Strongly Disagree

6. I will use information resources from the library research guide for assignments in other classes.

Strongly Agree   Agree   Neither Agree Nor Disagree   Disagree   Strongly Disagree

7. The library instruction session and library research guide helped me academically.

Strongly Agree   Agree   Neither Agree Nor Disagree   Disagree   Strongly Disagree

8. I will use what I learned from the library instruction session in assignments for other classes.

Strongly Agree   Agree   Neither Agree Nor Disagree   Disagree   Strongly Disagree

9. Concepts covered in the library instruction session or on the library research guide were integrated into the class.

Strongly Agree   Agree   Neither Agree Nor Disagree   Disagree   Strongly Disagree

10. What I learned in the library instruction session was reinforced in class.

Strongly Agree   Agree   Neither Agree Nor Disagree   Disagree   Strongly Disagree

11. What suggestions or comments do you have regarding the library instruction session?

12. What suggestions or comments do you have regarding the library research guide?

## Appendix E

### **Experimental Group (I-LEARN Instruction) Outline**

The first 20 minutes of the session included the same content as the control (Standard Instruction) group. The remaining 30 minutes focused on information evaluation and use, designed using the I-LEARN model.

#### **Instructional Outline**

##### **Same as Control (Standard Instruction) Group:**

**0-5 min:** Objectives, class needs/topics, introduction to library research guide which includes research process steps, links to relevant databases, checklists for evaluating information resources, where to get help, etc.

**5-10 min:** Importance of evaluation, steps for evaluating an information resource, evaluation practice.

**10-20 min:** Background research and pre-search strategies, keywords versus subjects, developing basic search strategy with practice searching, places to find sources for class needs/topics, see guide for details.

##### **Different from Control (Standard Instruction) Group:**

**20-30 min:** Introduction to steps of I-LEARN process on guide, discuss various types of information and their use, focusing on class needs/topics.

**30-40 min:** Discuss how these steps can help you find, evaluate, and integrate information resources for your assignment, practice.

**40-50 min:** Review guide, questions, more practice if time.

## Appendix F

### Experimental Group (I-LEARN Instruction) Library Research Guide


The guide is designed for students to use independently to conduct library research. The guide includes selected databases, reference books, and other information resources appropriate for the assignment as well as a checklist for evaluation of information resources. Participants in the experimental group (I-LEARN Instruction) had access to a library research guide designed using the I-LEARN model.

For sections of WRD 111 involved in a research project in Spring 2013  
Last Updated: Feb 15, 2013 | URL: <http://libguides.uky.edu/wrd111b> | [Print Guide](#) | [Email Alerts](#)

[Welcome](#) | [Identify your topic](#) | [Locate information](#) | [Evaluate sources](#) | [Apply information](#) | [Reflect on process](#) | [kNow and integrate](#)

**Welcome** | Comments (0) | [Print Page](#) | **Search:**  This Guide | [Search](#)

#### Ask-a-Librarian



Questions?  
Email, call, visit, or chat with a librarian.

Comments (0)

#### Welcome

**Welcome to your guide for WRD 111**

This guide will connect you with resources to find journal articles, newspaper articles, books, and other sources.


This guide is structured around the I-LEARN information use and learning model (Neuman, 2011). The tabs above will take you through each step of the process of finding, evaluating, and using information.



Have any questions? Just [ask me](#) or use the [ask a librarian](#) service, as we're glad to help!

Comments (0)

#### Librarian



**Stacey Greenwell**



**Contact Info**  
Associate Dean, Academic Affairs & Research  
2-44 William T Young Library  
(859) 218-1322  
[Send Email](#)

#### Library Information

These links connect you to key information about using UK Libraries.


For more information, visit UK Libraries' website.

- How to Use the Library Off-Campus
- How to Check Out Books and Other Materials
- Campus Library Locations
- Campus Library Hours
- Find Other Research Guides

Comments (0)

#### Use of the I-LEARN Model

This example shows how the I-LEARN model can help you work through a topic.



[I-LEARN Sample Worksheet](#)



[I-LEARN Blank Worksheet](#)

Comments (0)

#### About this Guide

This guide is part of dissertation research being conducted by Stacey Greenwell in Spring 2013.

Debbie Sharp created the original WRD 110/111 guide.

For more information about the I-LEARN model:

Neuman, D. (2011). *Learning in information-rich environments: I-LEARN and the construction of knowledge in the 21st century*. New York: Springer.

Comments (0)

## Appendix G

### **Control Group (Standard Instruction) Outline**

This instruction was designed using Morrison, Ross, and Kemp (2004). The first 20 minutes of the session included the same content as the experimental group instruction session.

### **Instructional Outline**

#### **Same as Experimental (I-LEARN Instruction) Group:**

**0-5 min:** Objectives, class needs/topics, introduction to library research guide which includes research process steps, links to relevant databases, checklists for evaluating information resources, where to get help, etc.

**5-10 min:** Importance of evaluation, steps for evaluating an information resource, evaluation practice.

**10-20 min:** Background research and pre-search strategies, keywords versus subjects, developing basic search strategy with practice searching, places to find sources for class needs/topics, see guide for details.

#### **Different from Experimental (I-LEARN Instruction) Group:**

**20-50 min:** Hands-on practice with topic.

## Appendix H

### Control Group (Standard Instruction) Library Research Guide

The guide is designed for students to use independently to conduct library research. The guide includes selected databases, reference books, and other information resources appropriate for the assignment as well as a checklist for evaluation of information resources. Participants in the control group had access to a library research guide which addresses the ACRL (2000) information literacy competency standards.


For sections of WRD 111 involved in a research project in Spring 2013  
Last Updated: Jan 25, 2013 | URL: <http://libguides.uky.edu/wrd111a> | [Print Guide](#) | [Email Alerts](#)

[Getting Started](#) | [1: Develop Your Topic](#) | [2: Search Strategies](#) | [3: Credible Sources](#) | [4: Evaluation](#) | [5: About Plagiarism](#)

**Getting Started** | [Comments \(0\)](#) | [Print Page](#) | **Search:**  [This Guide](#) | [Search](#)

#### Be a Better Researcher

Recommended books on research and presentations. Available in Young Library.




**Writing Research Papers**  
Call Number: Young REF LB2369 .L4 2010

**Beyond the Internet: Successful Research Strategies**  
Call Number: Z710 .C43 2007

**Better Than Bullet points: Creating Engaging E-learning with PowerPoint**  
Call Number: Young REF HF5549.5.T7 B6196 2008

#### Brainstorming Keywords Worksheet


Use the **Brainstorming Keywords Worksheet** to help you develop your research topic.



**Brainstorming Keywords Worksheet**  
[Comments \(0\)](#)

#### Research Skills for WRD 110 & 111

This guide will help you hone your research skills for your **WRD 110/111** assignments.



Click on either the pages above or the links below to walk through the steps of the research process.

The research process typically includes five broad steps.

Most often you complete one step before moving onto the next. However, there may be times when you will need to return to a previous step or complete multiple steps simultaneously.

**Step 1. Develop Your Topic**  
[Select a Topic](#) | [Identify Keywords](#)


**Step 2. Search Strategies**  
[Refine a Topic](#)

**Step 3. Find Credible and Relevant Sources** < [Opens new page](#)  
[Find Books](#) | [Find Popular and Newspaper Articles](#) | [Find Scholarly Articles](#) | [Find Primary Sources](#) | [Find Websites, Videos and Images](#)


**Step 4. Evaluate Information**  
[Types of Periodicals](#)

**Step 5. About Plagiarism**  
[Citation Help](#) | [Works Cited Examples](#)

#### Librarian



**Stacey Greenwell**



**Contact Info**  
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[Send Email](#)

#### About this Guide

This guide is part of a research project being conducted by Stacey Greenwell.

Thank you to Debbie Sharp for creating the original WRD110/111 guide:  
<http://libguides.uky.edu/wrd>

[Comments \(0\)](#)



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## **Vita**

### **Stacey Carolyn Greenwell**

#### **Education**

University of Kentucky, Masters of Science in Library Science, 1998

University of Kentucky, Bachelor of Arts in English, 1996

#### **Professional Positions**

Associate Dean for Academic Affairs and Research, University of Kentucky, 2010-present

Head, Information Commons, University of Kentucky, 2007-2010

Head, Library Desktop Support, University of Kentucky, 2001-2006

Manager, Systems and Technical Services, Warren County Public Library, 1999-2001

Instructor, Library Media Education, Western Kentucky University, 1999

Reference Librarian, Warren County Public Library, 1998-1999

#### **Professional Honors**

Outstanding Special Libraries Association Academic Division Member Award, 2011

Dow Jones Leadership Award of the Special Libraries Association, 2010

Grieg Aspnes Outstanding Member Award for the Information Technology Division of the Special Libraries Association, 2010

Frye Leadership Institute Fellow, 2009

Fellow of the Special Libraries Association, 2009

Lyrasis NextGen Librarian Award for Leadership, 2009

Outstanding Chapter Member of the Special Libraries Association Kentucky Chapter, 2008



Professional Award of the Special Libraries Association Kentucky Chapter, 2006

Circles of Power Leadership Program, 2005

American Library Association/EBSCO Conference Sponsorship, 2002

Kentucky Library Association Academic Section Professional Development Grant, 2002

### **Professional Publications**

Morrison, J. R. and Greenwell, S. (2012). Classic articles in instructional design and distance education. In L. Moller & J. Huett (Eds.) *The next generation of distance education: unconstrained learning*. New York: Springer.

Greenwell, S., Kraemer, E., Sharp, S., & Smith, S. (2010). Saving Student Brian: Engaging Students with Innovative Technology. *Librarian as Architect: Planning, Building and Renewing. Thirty-sixth National LOEX Library Instruction Conference Proceedings, Oak Brook, Illinois, May 1-3, 2008*. Ypsilanti, MI: LOEX Press.

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