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EXAMINING STUDENT PERSPECTIVES ON INFORMATION LITERACY

By

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ABSTRACT

The American Library Association released its *Framework for Information Literacy in Higher Education* in response to the changing needs and demographics of today's digital native students. This study was designed to ascertain first-year undergraduate students' definitions and perspectives of information literacy to determine how they are aligned to the Association of College and Research Libraries (ACRL) six frames of information literacy. The overarching research question was: How is the Association of College and Research Libraries *Framework for Information Literacy* aligned to first-year undergraduate student expectations of information literacy instruction? The following supplemental research questions supported the study:

1. How do first-year undergraduate students define the term information literacy?
2. How do first-year undergraduate students' past experiences and perceptions influence their definition of information literacy?
3. What concepts do first-year undergraduate students expect to obtain from information literacy instruction and how do they expect to achieve these objectives?

Eight first-year undergraduate students participated in the qualitative study. Each participant was interviewed and transcripts of the interviews were coded to determine common themes and trends in the data.

Findings from the study indicate that participants could not completely define the term information literacy, although they had a general, conceptual sense of what information literacy was and why it was important to them as students. Additional findings showed there was no

connection between past library instruction and students' definition of information literacy.

Participants' definitions of information literacy were aligned to three of the six frames and their expectations of information literacy instruction were aligned to five of the six frames. This study recommends the continued practice of designing information literacy instruction using the ACRL *Framework* and incorporating digital literacy concepts in active learning environments.

Key words: information literacy, first year experience, digital literacy, library instruction, academic libraries

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CHAPTER 1

INTRODUCTION

This qualitative study explored how the Association of College and Research Libraries *Framework for Information Literacy in Higher Education* is aligned to current first-year students' beliefs, perspectives, and expectations. The research took place in an academic library that serves a small, Catholic, liberal arts college in the metro Boston, Massachusetts area. The 62,000-square foot library contains the main collections and space for individual and group study to accommodate the 2,400 undergraduate students enrolled in the institution. The five full-time reference librarians are responsible for supporting faculty and student research and information literacy instruction.

Library Transformation

Perhaps the most significant transformation in the library occurred in 1999 when the library and institution administration chose to migrate from a traditional paper card catalog to an integrated library system (ILS) from Innovative Interfaces, Inc., a leading worldwide library automation vendor. As part of the migration from print to digital, this migration allowed the library to begin providing electronic resources and database access to patrons, thus expanding the amount of resources available to patrons. Utilization of the ILS allowed additional library vendors such as the Online Computer Library Center (OCLC), a nonprofit library organization that facilitates resource sharing between libraries, to facilitate inter-library loans for library patrons to access print and electronic material from worldwide libraries. In the nineteen years that followed since the beginning of digitization initiatives, the library has grown from subscribing to a few electronic databases to over 120. The increase in electronic resources provides patrons with multiple points of access to obtain resources from on-campus and off-

campus, thus shifting librarians' roles from helping patrons find information to teaching patrons how to find information.

Courant and Nielson (2010) wrote: "as more works are made available digitally, libraries will increasingly have to choose between keeping a given work in digital or print form – acknowledging that either can be converted to the other at some cost" (p. 82). After an extensive needs assessment and review of procedures in 2013, the library shifted its collection development policies to maximize patrons' access to electronic resources. Thorough research regarding depreciation over the lifecycle of a print resource, security, overhead, staffing, time, and maintenance, indicated that it costs on average \$4.26 per print resource per year in a typical open stack library (Courant & Nielson, 2010, p. 91). Using this statistic, it was determined that the library spent approximately \$213,000 per year to maintain, secure, and provide access to the library's nearly 50,000 print resources stored in the open stacks. Facing reduced budgets due to declining institutional enrollment, the library chose to prioritize purchasing electronic resources instead of print resources to minimize future cost of storing print materials in open stacks.

Terrell (2015) argued that because of the amount of information available to humans through the Internet accessible via fingertips, "Both users and librarians now turn to the web as the first resort for answering quick reference queries, and they turn to online databases and journals for exploring complex research questions. Meanwhile, print works that were once used daily sit moldering, gathering dust on the shelves either because they are outdated or because no one thinks to find them" (p. 57). Trends in patron use at the institution consistently indicate yearly increases in the use of electronic resources. To better understand patron use, Liu and Luo (2011) created a survey to understand what drove patrons to prefer electronic resources over print. Survey results indicated that patrons prefer digital resources because "digital libraries

allow remote access, digital libraries allow 24-hour access, digital libraries allow faster access, and no need to worry about a source being checked out” (Liu & Luo, 2011, p. 252).

Growth and Setbacks

Hernon and Matthews (2013) posited that, because of the shift in preference to electronic resources, the physical library is changed as a result. As they suggest, “Today, there are calls for repurposing libraries and creating spaces for dynamic and interactive learning” (Hernon & Matthews, 2013, p. 4), and the library at the center of this research study is no different. Because of the reduction in print materials (through discarding and electronic purchasing), space once occupied by stacks was reclaimed for collaborative space that fosters a “bring-your-own-device” (BYOD) environment. The library also updated its collection development policies to reflect the library’s mission by valuing electronic media over print media because of the increased long-term accessibility (Liu & Luo, 2011). Similarly, the decision was made to weed print materials from the stacks as the content becomes outdated or the condition of the resource deteriorates.

Connaway and Randall (2013) described the Internet’s effect on the research process as a change factor in library service models. Before the increase of online electronic resources, “information was local; now it is global, we can get information anywhere” (Connaway & Randall, 2013, p. 42). The globalization of information has changed the research process from a linear step-by-step model to an interlinked, reiterative process based on critical inquiry and reflection. Despite the efforts to increase the number of electronic resources available, there have been complaints from teaching faculty at the institution regarding decreased quality of student research. These complaints include instances of students using non-academic sources, such as Wikipedia or non-scholarly journals, to supplement their research. In response to these complaints, librarians developed an information literacy instruction class. Faculty may request a

reference librarian to teach an information literacy course during a scheduled class time.

However, despite the librarians' outreach to faculty to encourage the information literacy instruction, information literacy is not a required course for graduation from the institution.

Current first-year undergraduate students born during and after the technology growth of the early twenty-first century are referred to as digital natives and have characteristics unlike previous generations. Helsper and Eynon (2010) described this generation as students who are "likely to come from media-rich homes, are more confident about their skills and are more likely to engage in online learning activities" (p. 515). However, Kirkwood and Price (2005) warned, "It is not technologies, but educational purposes and pedagogy, that must provide the lead, with students understanding not only how to work with ICTs [information and communication technologies], but why it is of benefit for them to do so" (p. 257). Therefore, to create digital and information literate students capable of competing in today's global information economy, educators must not assume that technology-savvy students have the skills to access, evaluate, and utilize information to solve problems.

Despite the need for information literacy, critics such as Sinanan (2009) argued, "librarians are going about educating their students in the wrong ways, resulting in a disconnect between librarian and student, further alienating the two from each other" (p. 185). Taking this into consideration, the reference librarians at the institution designed an interactive digital and information literacy instructional program to take place during the first-year experience (FYE) class. Over the course of one week in September, all sections of FYE classes met at the library for digital and information literacy instruction. Instead of providing the instruction in a traditional single seventy-five-minute instructor-led lecture-style format, librarians designed the program to be informational. Instead of sitting in a lecture hall, librarians set up five different

“stations” within the building that students visited to learn about specific services related to information literacy concepts and how librarians can help with the research process. The focus of the program was on showing students how librarians can help with the research process and teach foundational information literacy concepts, rather than on encouraging students to become self-sufficient researchers without the library’s help.

Problem Statement

The role of the academic library is changing; with the proliferation of network access and information available on the Internet, first-year undergraduate students have access to countless academic and non-academic search portals to obtain research materials. Although librarians designed an information literacy course to offer on-demand as requested, faculty are not required to integrate information literacy instruction into their courses and students are not required to consult with reference librarians for research help. Bombaro (2014) suggested that faculty members whose students do not receive information literacy instruction believe their students do not “make informed decisions during the research process” (p. 247). This is partly because librarians stress “information literacy is not about the mechanics of using online resources, but rather about analytical thinking” (Bombaro, 2014, p. 247). Faculty perspectives regarding students’ lack of information literacy and scholarly research knowledge are further corroborated by research from Averill and Lewis (2013) who posited, “Results of these studies and others indicate that students at both the secondary and undergraduate levels do not use this research process and rely heavily on Google and sources such as Wikipedia. Use of monographs and databases listing peer-reviewed journal articles is uncommon” (Averill & Lewis, 2013, p. 114). For first-year students, there is a large population of students without ample information literacy skills (Averill & Lewis, 2013).

Although the information literacy course was designed to meet the learning objectives set by faculty, there was no input from students to identify gaps in their information literacy skills. In addition, there was no analysis of students' expectations or students' backgrounds to understand how their perceptions of information literacy were formed. Prensky (2005) posited that student input is especially critical in instructional development in higher education. A curriculum developed without student input often doesn't incorporate current trends in technology or student engagement and can create a disconnect between the levels of student and faculty technology fluency. Therefore, students should have input on how they want to learn (Prensky, 2005).

Noh (2017) postulated that for undergraduate students to succeed in today's digital knowledge-based economy, students must possess the digital and information literacy skills necessary to effectively use technology to retrieve, evaluate, and utilize information to solve problems. However, Huvila (2011) emphasized information creation as a critical part of digital and information literacy. Simply put, the effect of technology has "simplified creation and organization of information" (Huvila, 2011, p. 238). Digital literacy instruction aims to teach students how to use technology to create information that is effectively organized and available for others to access. To teach these "sociotechnical competencies" (Huvila, 2011, p. 237), librarians should focus on teaching digital and information literacy skill-building activities instead of competency knowledge.

Research from Lanning and Mallek (2017) further examined high school information literacy programs and found that high school librarians "faced complicated battles with teachers who are not as invested in raising the research skills of their students, and with students who do not place importance on evaluating the sources they find on the internet, believing them at face

value” (p. 443). The researchers further argued that without proper information literacy skill building activities at the high school level, students are unprepared for college-level research. Without requiring information literacy instruction as a required curriculum component, there is no way to assess and ensure that all students receive the instruction to perform research at the college-level.

In reaction to research from Huvila (2011) and Noh (2017), reference librarians at the research site sought to design a way in which all students would receive basic digital and information literacy instruction. Initially, the librarians sought to integrate digital and information literacy instruction across the curriculum. After receiving resistance from teaching faculty who could not afford to redesign their courses to accommodate additional instruction, librarians worked with various student engagement offices to integrate the instruction within the FYE class required for all first-year students. The FYE class took place over nine weeks in the fall semester in which first-year students were exposed to resources, services, and programs available to them to aid with their academic success and social development.

In the fall of 2017, librarians at the research site developed a Digital and Information Literacy Week program to take place during one week of FYE. All first-year students came to the library and learned about library services (reference consultations and interlibrary loan), information literacy concepts (how to locate books, how to search the electronic databases, how to use the library catalog, and how to cite resources), and digital literacy concepts (how to draft a professional email, how to communicate with off-campus partners during the research process, and how to use information sharing services), all in a seventy-five minute workshop. The program was designed after recognizing that many students without proper information literacy skills (including graduate students) use non-academic sources such as Google or Wikipedia to

begin the research process (Lanning & Mallek, 2017). The Digital and Information Literacy Week was developed based on research that indicated “as Internet and database research has grown, it has been documented that students’ skills in locating, evaluating, and synthesizing information have decreased and students are not feeling adequately prepared to find and use information” (Lanning & Mallek, 2017, p. 444). In addition, the program was also developed and designed with the intent of closing of the socioeconomic gap in access to digital resources and technology known as the digital divide. Lee (2014) found that the ability to use digital tools and technologies is not a universal skill held by digital natives; rather, digital natives are simply individuals who have been exposed to technology since birth. The digital divide and the socioeconomic gap in digital literacy is considered a social justice issue because as technology involves, “those with a lack of digital literacy can be further marginalized, given that information, communication, business, and prevailing social functions are increasingly structured on the internet” (Lee, 2014, p. 30).

Purpose of the Study

The purpose of this study is to understand student expectations of information literacy instruction and how the *ACRL Framework for Information Literacy in Higher Education* is aligned to these expectations. This study engaged first-year undergraduate students to share their definition of information literacy and what they expect to learn from information literacy instruction. Although the *ACRL Framework for Information Literacy in Higher Education* is regarded as the guiding force in developing information literacy instruction, data gathered in this study provided specific anecdotal information that can be used locally to tailor information literacy instruction to meet student expectations and learning preferences. On a broader scale, this study provides an example of how other academic libraries can engage students to ensure

their information literacy instruction programs are meeting student expectations. Additionally, future studies like these may foster collaboration between libraries to establish best instructional practices and course objectives to meet future first-year undergraduate students.

Research Questions

This study was designed to discover further insight regarding the following questions about information literacy instruction, instructional design principles, and the role of librarians as instructors. The overarching research question was: How is the Association of College and Research Libraries (ACRL) *Framework for Information Literacy* aligned to first-year undergraduate students' expectations of information literacy instruction? The following supplemental research questions supported the study:

1. How do first-year undergraduate students define the term information literacy?
2. How do first-year undergraduate students' past experiences and perceptions influence their definition of information literacy?
3. What concepts do first-year undergraduate students expect to obtain from information literacy instruction and how do they expect to achieve these objectives?

Existing Information Literacy Initiatives

Beginning in 2016, reference librarians at the library began developing an information skills curriculum using the ACRL *Framework* as a guide for all students. The curriculum was designed to introduce students to basic information literacy skills as first-year students and provide more complex information literacy skills as they progressed through their upperclassmen years. To implement this curriculum, the reference librarians at the library partnered with faculty to understand their expectations and student research needs to tailor custom information skills instruction.

The information skills curriculum effectiveness on student learning was contingent on collaboration between reference librarians and faculty. Librarians collaborated with faculty to determine specific gaps in students' knowledge and skills and designed learning objectives to overcome the gaps in knowledge and skills. Based on the needs and preference of faculty, librarians implemented the information skills curriculum through in-person instruction or asynchronous online instruction. Despite librarians' outreach to engage faculty in implementing the information skills curriculum in their courses, there was no institutional requirement for faculty to implement the curriculum.

Over the past three years since its inception, there has been no assessment to gauge the effectiveness of the information skills curriculum on students' research knowledge and skills. In addition, there has been no empirical evidence to indicate a positive relationship between students' research knowledge and skills. The effectiveness of the instruction remains based on anecdotal information from faculty who chose to implement the information skills curriculum in their courses. Currently, implementation of the instruction remains voluntary and at the discretion of faculty.

Conceptual Framework: A Brief Overview

Lokse, Läg, Solberg, Andreassen, and Stenersen (2017) wrote that the biggest obstacle in current one-shot information literacy instruction is librarians' desire to fit as much information as possible into a single instruction period. Typically, this is done through traditional lecture format that leaves little to no time for student discussions or reflection. As part of this study that incorporates the use of technology and promotes self-efficacy, digital and information literacy instruction should focus on developing students' critical thinking instead of memorization of facts (Lokse et al., 2017).

Unlike traditional lecture-format instruction, active learning theory emphasizes engaging students in their learning through solving real-world problems and interacting with their peers in critical discussions of course concepts and reflections (Lokse et al., 2017). Detlor, Booker, Serenko, and Julien (2012) researched active learning in information literacy instruction and found that active learning also engages students' past experiences, attitudes, and beliefs to form connections to new material. Furthermore, engaging students' beliefs and perceptions in the classroom aligns to the institutional mission of educating mind, body, and spirit through liberal arts education.

Within active learning, Schunk (2012) described learning as taking place through problem-solving. Students working through problems learn by establishing a goal (successfully solving the problem), creating mini-goals (milestones leading to successful completion), and developing a process to achieve those goals. As students successfully solve problems, students create rules associated with successful problem-solving processes. These learned rules are categorized and organized for easy recall later. Unlike traditional lecture-format instruction that requires the memorization of facts, active learning requires higher-order thinking to discover “the organization of the situation [problem] and the relationship of the elements to the problem solution” (Schunk, 2012, p. 301).

According to Grabinger and Dunlap (1995), active learning instructional systems place instructional concepts within the context they are to be used, unlike traditional passive instructional methods in instructor-led lectures (Prince, 2004). Using this approach, active learning theory is utilized in the Digital and Information Literacy Week by placing the instruction in the library, encouraging students to share their experiences as a starting point for

class discussions, and having students reflect on what they learned by describing how the material will help with research problems and other assignments requiring scholarly resources.

Rationale and Significance of Study

Rockman (2002) argued that “libraries want to be able to show that the role of the library has a strong impact on campus mission and goals by strengthening the quality of a student’s educational experience, empowering students with a renewed confidence in learning ... and providing a strong foundation for the retention and transferability of learning to any new experience” (p. 192). Bauder and Rod (2016) stated that, as a response to the changing needs and competencies of the new digital-native generation students, the 2015 ACRL *Framework for Information Literacy in Higher Education* moved from objective-based instruction with measurable learning goals to conceptual-based instruction that focused on critical thinking and evaluation. The five core concepts of information literacy instruction as per the 2015 ACRL *Framework for Information Literacy in Higher Education* are as follows:

1. “Authority is constructed and contextual” (Bauder & Rod, 2016, p. 253)
2. “Information creation as a process” (Bauder & Rod, 2016, p. 255)
3. “Information has value” (Bauder & Rod, 2016, p. 257)
4. “Research as inquiry” (Bauder & Rod, 2016, p. 258)
5. “Scholarship as a conversation” (Bauder & Rod, 2016, p. 260)
6. “Searching as strategic exploration” (Bauder & Rod, 2016, 262)

Successful mastery of these concepts ensures students are equipped with the proper skills to assess information needed to solve a problem or research question, find the information needed through libraries and other sources, and evaluate resources based on authority, validation, and

bias. These skills, Weiner (2012) states, are “essential for individual and community empowerment, workforce readiness, and global competitiveness” (p. 286).

However, as Rockman (2002) emphasizes, “support for a changing university curriculum that includes information literacy has also come from a variety of external stakeholders” (p. 188). Therefore, to design and implement a successful information literacy program, librarians will have to work with faculty and other student-centered offices (such as Career Services, Academic Advising, etc.) to ensure the objectives of the information literacy course will provide students with the skills needed to succeed in graduate studies and the workforce. Not only will this help students, but it will also show community stakeholders (employers, donors, alumni, mentors, etc.) that the institution prepares students for success for current academic endeavors and beyond.

Although the current ACRL *Framework for Information Literacy in Higher Education* outcomes are conceptual and not completely measurable, studies have shown that information literacy instruction does have a positive impact on student research. Stewart (2011) conducted a study in which information literacy knowledge and skills were compared between first-year students with no college information literacy instruction experience and upperclassmen in a capstone research course with prior college information literacy instruction (p. 270). The study yielded results that “showed very positive impact of information literacy instruction in developing strong research skills in students and the relationship of these skills to the curriculum” (Stewart, 2011, p. 270).

In conclusion, success in the current knowledge economy requires students to have strong technological and critical thinking skills to solve problems (Huvila, 2011; Noh, 2017). Although the ACRL designed the *Framework for Information Literacy in Higher Education* to be a central

guiding force in designing information literacy, the task force assigned to create the *Framework* consisted only of librarians. Without student input derived from past experiences and generational preferences, the ACRL *Framework* was designed to meet student needs based on what librarians determined to be important. Thus, this study was needed to discover the concepts that students feel are important to developing information literacy skills and identify how the ACRL *Framework* is aligned with student perspectives. Information gathered from this study is valuable in identifying how information literacy instruction programs can be redesigned to meet student expectations and maximize student engagement.

Assumptions and Limitations

Within this study, there are several important assumptions and limitations to consider. This study is grounded in social constructivism theory, which Johnson (2014) explained is rooted in one's own perception and meaning of a topic based on previous experiences. Thus, one participant's knowledge may not be consistent with others because of differences in past experiences with information literacy. Therefore, this study assumes that each participant's experiences with information literacy may vary and is designed to distinguish certain experiences and interactions with information literacy that have led to their construction of existing knowledge. The interview questions are designed to probe participants' past experiences and ask for connections between how those experiences shaped their current definitions and perspectives of information literacy.

However, this study did not aim to assess student learning and student comprehension of information literacy concepts. Instead, this study's findings can inform librarians and library administrators about how to best maximize instructional time and to make an information literacy course that is relevant, practical, and engaging for students. This study is limited in the

fact that it should not be used to determine the specific principles and tenets of information literacy that should be taught in a given instructional period. Rather, findings should be used to maximize instructional time by using effective and engaging instructional methods.

Yet, despite the assumption that each participant's experience will vary and the limitation that this study was not designed to determine instructional concepts, the importance and necessity of the study should not be minimized. For other institutions attempting to incorporate information literacy instruction, this study shows how existing programs (such as FYE or other first-year orientation programs) can be utilized to incorporate digital and information literacy instruction and other forms of library instruction. As active learning and information literacy continues to evolve to foster students' critical thinking skills (Lokse et al., 2017), existing programs that are well-established and attended can help improve student learning and expand the outreach of the library.

Definitions of Terms

The following terms below are frequently used throughout this research. The definitions of these terms are:

- **ACRL.** An acronym for the Association of College and Research Libraries, the ACRL is a sub-organization of the American Library Association (ALA).
- **Digital literacy.** Digital literacy is “a person’s knowledge of and skills in using information and communication technologies and the ability to perform a variety of complex tasks using them effectively and efficiently in digital environments” (Lee, 2014, p. 29).
- **Faculty.** For this study, the term faculty (or teaching faculty) refers to instructors with a terminal degree in their field teaching courses in their specialty at the institution.

- **Framework.** This is short for the ACRL publication, *Framework for Information Literacy in Higher Education* (2015).
- **Gamification.** Gamification is the incorporation of game-like elements used to facilitate engagement and learning.
- **Information literacy.** Information literacy is “the set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information” (ACRL, 2017).
- **Instructional design.** Instructional design is “the systemic process by which instructional materials are designed, developed, and delivered” (Instructional Design Central, 2017).
- **Learning preferences.** Learning preferences is the term used to describe “a person’s characteristic patterns of strengths, weaknesses, and preferences in taking in, processing, and retrieving information” (Bowdoin College, 2017).
- **Liberal arts college.** A liberal arts college is a four-year undergraduate institution with broad areas of subject specialties in the arts, humanities, and sciences (in contrast with research universities with narrow tracks of specialized study).
- **Librarian.** In this study, librarians are full-time employees of the academic library with a Master of Library Science (or Master of Library and Information Science) degree responsible for assisting faculty, staff, and students with their research needs.
- **One-shot library instruction.** These are single instruction sessions that “are usually either 50- or 80-min long and tend to be focused on a specific research project” (Cisse, 2016, p. 50).

- **Students.** For this study, the term “students” refers to undergraduates entering their first year of college enrolled in a matriculated program.

Conclusion

Walton and Pope (2006) emphasize the international commitment toward creating an “‘information society’, a basic human right and an integral part of education for all” (p. 3) in the 2003 *Prague Declaration*. The core of digital and information literacy is to develop critical thinking and evaluation skills that help establish the foundation of lifelong learning (Walton & Pope, 2006). Cowan and Eva (2016) argued that students are most influenced by faculty; although libraries do not have the manpower to embed librarians in every course (p. 164), librarians can collaborate with faculty to show them how information literacy can be intertwined with existing syllabi and assignments. By designing instruction available to students upon entering their first-year, digital and information literacy will become part of the institutional teaching and learning culture.

CHAPTER 2

REVIEW OF LITERATURE

Academic libraries are on the forefront of providing access to information to the scholarly community. Academic libraries are valued institutions centered on promoting lifelong learning, research, and education to support a college or university's mission. Technology advancements no longer limit the role and services of the library to just its physical walls. Now that library patrons can obtain information from sources in and outside of the physical library, academic libraries also provide education and support to promote information literacy. The Association of College and Research Libraries (ACRL) (2016a), a sub-organization of the American Library Association (ALA), defines information literacy as, "the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning" (p. 3).

The following literature review first examines the need for information literacy and digital literacy instruction in higher education. Critical information literacy and digital literacy concepts are further analyzed through the lens of the library's role within the First Year Experience program. Finally, three constructivist learning theories used in information literacy instruction – authentic and experiential learning, situated and problem-based learning, and outcomes-based learning –are analyzed for their impact on student learning and engagement.

The Need for Information Literacy

According to Leaning (2017), the concept of information literacy was developed in response to the 1974 United States National Commission on Libraries and Information Science report that prioritized libraries' goals for developing patrons' critical thinking skills and use of

information for problem-solving (p. 40). However, it wasn't until the 1983 *A Nation at Risk* report by the U.S. Department of Education's National Commission on Excellence in Education that information literacy became a priority in education (Leaning, 2017). Allen (2008) pointed out that the landmark report "issued a warning" (p. 608) that if American schools failed to integrate technology into classrooms and teaching pedagogy, the US public school system would fail to create members of society that can use technology to solve problems in the competitive workforce driven by technology and globalism. In response to *A Nation at Risk*, the ALA published its 1989 report that sought to position libraries as change agents of society to incorporate information literacy into public and academic libraries documented in the Presidential Committee on Information Literacy (Leaning, 2017). The ACRL accomplished this by publishing its standards for information literacy and its most recent *Framework for Information Literacy in Higher Education* as a guide for academic libraries wishing to incorporate information literacy into their teaching programs.

Information literacy has a role in higher education and the modern-day workforce. Rockman (2002) stated that for students to succeed in today's information and technology-driven society, students must be information literate. Today's competitive workforce requires students who can access, analyze, and utilize information to solve problems effectively and ethically (Rockman, 2002). Further research that supports information literacy instruction indicated "the fact that the move to a knowledge-based economy has revealed that many workers are poorly prepared and equipped to effectively deal with using and managing information on a daily basis" (Rockman, p. 189). Given the generational preferences of current undergraduate students identifying as digital natives, students expect to use technology to quickly access information on-demand, but research from Sharkey and O'Connor (2013) did not find a positive correlation

between proficiency of technology use and information literacy knowledge. Therefore, information literacy instruction should be designed with the goal of utilizing “techniques and methodologies that give students a high level of aptitude to interact fluently with both information and technology” (Sharkey & O’Connor, 2013, p. 37). Expanding on the research from Rockman (2002) and Sharkey and O’Connor (2013), Pennsylvania State University librarians Raish and Rimland (2016) developed a quantitative study that surveyed private sector human resource professionals to ascertain the skills needed by current college graduates to succeed in a modern global economy. Of the 114 surveyed professionals, the researchers discovered five common skillsets valued by employers: critical thinking and using quality information skills, collaboration skills, ethically using technology skills, gathering information skills, and innovation skills (Raish & Rimland, 2016).

Despite the advancements of organizations like the ALA and ACRL, researchers and educators have long argued about who is responsible for teaching information literacy. Saunders, Severyn, and Caron (2017) examined data from a 2006 Educational Testing Services survey and found that of 6,300 incoming undergraduate college freshmen surveyed, only 14% were considered information literate. Furthermore, data from the Pew Research Center indicates that middle and high school students rely on online and free resources that may not be scholarly in nature or peer reviewed (Saunders et al., 2017). Using this data, college librarians believe high school students are not equipped with the information literacy skills to access scholarly resources because students are not entering college with the necessary skills (Saunders et al., 2017). In addition, Gross and Latham (2011) of Florida State University found that students with poor information literacy skills tended to overestimate their information literacy skills ability based on self-reported survey data. Given the limitations of incoming students’

information skills knowledge and ability, the onus of equipping students with the necessary information literacy skills falls on college librarians.

Information Literacy and Academic Achievement

Librarians Laskin and Zoe (2017) at Eugenio Maria de Hostos Community College in Bronx, New York sought to study how information literacy skills are related to students' academic success. This study was conducted at Hostos Community College, which serves a predominantly diverse and bilingual student population. In addition, "Hostos students – like those at many community colleges across the U.S. – often need to take developmental writing, reading, and/or math courses before they are eligible to take or are prepared to succeed in college credit courses" (Laskin & Zoe, 2017, p. 2). To increase information literacy instruction efforts across the Hostos community, librarians took a proactive approach in inserting themselves in the campus learning mission by designing information literacy instructional programs aligned to the Hostos curricula.

These instructional programs were offered to students in the form of workshops. All students were encouraged to participate and some faculty required students to participate (Laskin & Zoe, 2017). Initially, the study was designed for All Hostos students enrolled in selected introductory English courses. Students were administered information literacy skills pre-assessments at the beginning of the semester to determine students' foundational information literacy skills. Student attendance at the information literacy workshops was recorded throughout the semester. At the end of the semester, the same students in selected English courses were administered a post-assessment. However, librarians chose to explore the relationship between information literacy instruction and long-term academic success by using

performance metrics such as graduation rates, average GPAs, average number of semesters attending Hostos, and the average cumulative number of credits earned (Laskin & Zoe, 2017).

Over the three years of the study, 1,808 students participated in at least one information literacy workshop and 5,197 students did not participate in any of the information literacy workshops. Students who participated in the information literacy workshops had a graduation rate of 35.3% opposed to 9.8% of students who did not participate in the information literacy workshop. The average cumulative grade point average (GPA) of students who participated in the information literacy workshops was 2.65 opposed to 2.44 of students who did not participate in the information literacy workshops. Finally, students who attended the information literacy workshops attended 6.01 semesters on average and earned 46.11 cumulative credits on average; students who did not attend the information literacy workshops attended 4.3 semesters on average and earned 23.68 cumulative credits on average (Laskin & Zoe, 2017).

Data from this study are critical to strengthening the argument for information literacy instruction. Students who participated in the information literacy workshops also had higher average scores on City University of New York proficiency exams in reading, writing, and mathematics opposed to students who did not participate in the information literacy workshops (Laskin & Zoe, 2017). Collectively, this data indicated “that information literacy is not simply a set of skills that helps students do better on research assignments” (Laskin & Zoe, 2017, p. 17), but it is a comprehensive set of skills positively related to academic success.

The ACRL *Framework* as a Guide

According to Banks (2013), the original ACRL standards for information literacy instructed students to identify the library as a source for authentic scholarly resources. The standards did not recognize that students should still consider outside sources as valuable upon

careful examination of authority, potential bias, and accuracy (Banks, 2013). The ACRL (2016b) strategic plan calls for further promotion of academic libraries' value, lifelong learning, and a commitment to utilizing open access resources. These values are all aligned to supporting freedom of information and nondiscriminatory access to information (ACRL, 2016b). Burgess (2015) described the ACRL *Framework* designed to achieve student learning outcomes (rather than librarian instructional tasks) based on information literacy theory. The ACRL *Framework* provides perspectives for students to identify to develop their higher-order critical thinking skills about information as a resource and tool (Burgess, 2015).

External Forces on Information Literacy Competency

Despite the need for information literacy for today's college students, it is important to understand the external forces that influence students' information literacy knowledge and skills before they arrive to college. Lanning and Mallek (2017) discovered that one of the challenges students face in obtaining information literacy instruction takes place in high school. Although high school librarians may have the best of intentions to provide information literacy instruction for students, "they face complicated battles with teachers who are not as invested in raising the research skills of their students, and with students who do not place importance on evaluating the sources they find on the internet, believing them at face value" (Lanning & Mallek, 2017, p. 443). This places students at a disadvantage upon entering college when they are faced with performing academic research without the foundational skills to build upon. Even more, it is important to identify assumptions about college freshmen. Studies show that just because students have experience performing research, there is no empirical data to support that these students use library resources more than others (Lanning & Mallek, 2017). In fact, studies show

that students first turn to Google and Wikipedia when faced with a research assignment and are unable to search for resources using advanced search terms (Lanning & Mallek, 2017).

To further expand the body of research available, Lanning and Mallek performed their own information literacy research at Southern Utah University (2017). Incoming freshmen students were given a pre-test to assess their existing information literacy skills. After students were informed of the research and provided consent, the researchers obtained categorical information from the university's registrar regarding each student – high school attended and standardized test scores. Using data from the National Center for Educational Statistics, data regarding the student-to-teacher ratio, number of teachers, demographics, and average family's per capita income was used to create a socioeconomic profile of each student (Lanning & Mallek, 2017).

Using data from pre- and post-test assessments, the researchers found there were very few strong correlations between information literacy knowledge and skills and socioeconomic demographics (income, education level, etc.). The strongest correlation, although very statistically small (as evident in the regression tests), were standardized test scores. The data from Southern Utah University indicated that students with higher SAT and ACT scores had more information literacy knowledge and skills upon entering college than those with lower scores (Lanning & Mallek, 2017).

Introduction to Digital Literacy

Pool (1997) credits the term digital literacy to author and Professor Paul Gilster. Gilster defines digital literacy as “the ability to understand information and – more important – to evaluate and integrate information in multiple formats that the computer can deliver” (para. 3). Nelson, Courier, and Joseph (2011) cautioned against the assumption that individuals with

technology skills are digitally literate. They wrote, “digital literacy or competence, however, is a broader concept and does not automatically follow from the ability to use ICT tools” (Nelson et al., 2011, p. 95). Unlike information literacy with its outcomes designed by the ACRL, digital literacy is attained through mastering three competency levels: digital competence (skills), digital usage (applications), and digital transformation (creation) (Nelson et al., 2011). Unlike the modular design of information literacy, digital literacy cannot be dissected into individual components. Simply put, digital literacy instruction is all-or-nothing (Nelson et al., 2011).

The Need for Digital Literacy

Margaryan, Littlejohn, and Vojt (2011) described today’s first-year college students as belonging to a generation of digital natives. Digital natives are individuals born after 1980, were exposed to technology and the Internet in their early years and are assumed to be “inherently technology-savvy” (Margaryan et al., 2011, p. 429). Further expanding on the research, Erstad (2015) cautioned that general assumptions about digital natives, “can easily be misleading and give the impression that all young people today are super-users and highly competent in their use of digital media” (p. 85). This is, in part, due to research that indicates the world economy is changing and the most in-demand jobs were non-existent even a mere decade ago (Erstad, 2015). Thus, the need for digital literacy must not focus on how to use specific technologies. The technology tools used to access information will constantly change as technology evolves, but there must be special attention given to ensure that technology users understand how to use technology (new and old) for information and communication purposes.

Examining the Relationship Between Digital Literacy and Information Literacy

At the surface, it may seem that digital literacy and information literacy instruction have the same outcome – to equip students with the knowledge and skills to identify, search for, and

utilize information effectively and ethically in today's knowledge society. However, Cordell (2013) pointed out that the ALA's Office of Information Technology Policy's Digital Literacy Task Force reported, "although academic libraries are more focused on information literacy than digital literacy, these two twenty-first century literacies are closely linked: information literacy requires digital literacy to access appropriate online research sources, and information literacy gives further context to the evaluation skills developed by digital literacy" (p. 179). Cordell proposed the question: can a person be informationally literate without being digitally literate? According to the ALA, the answer is no.

Since the ALA positioned that digital literacy and information literacy are not two opposing, competing concepts, the ACRL developed guidelines for librarians to incorporate information literacy instruction. At the forefront, librarians must establish the minimum technological skills needed for all students to participate (Cordell, 2013). However, this may be problematic for libraries whose staff are expected to teach basic technology skills. It can become a political argument between faculty, administration, librarians, and information technology support staff to determine who is responsible for teaching students how to use campus technology. The ACRL even went so far as to state that if librarians are not responsible for teaching mathematical theory, literary theory, or scientific theory to support discipline-specific student research projects, librarians should not be required to teach basic technology skills. Simply put, librarians are expected to teach the research process and not how to use tools that support the research process (Cordell, 2013).

Critics of the ACRL's stance see the integration of digital literacy as an opportunity to "reengage academic colleagues in a meaningful discussion of the knowledge and skills students need today" (Cordell, 2013, p. 183). This can include, but is not limited to, redefining

institutional policies on information literacy instruction, working with faculty to determine what information literacy skills students are lacking, and working with information technology experts to understand what technology exists within the institution and how it can be used to enhance instruction. Lastly, critics of the ACRL's stance agree that, "librarians have an obligation to their institutions to inform broader discussions of curricula whenever we have significant input to offer, and this is such a time" (Cordell, 2013, p. 183).

Defining First Year Experience

Bigger (2005) of the National Academic Advising Association described FYE programs as an outreach of traditional freshman orientation programs offered to new undergraduate students whose development is often accredited to University of South Carolina professor John Gardner in the 1970s. In an interview with Schroeder (2004), Gardner defined FYE as "a national and international effort to improve the first year, the total experience of students – and to do this intentionally by rethinking the way the first year was organized and executed" (p. 10). Unlike other campus programs that take place in specific niches (e.g. athletic facilities for student-athletes, residence halls for resident students, etc.), FYE takes place in classrooms (Schroeder, 2004) since that is where all traditional learning takes place. Furthermore, it takes into consideration the changing demographics of the modern undergraduate as the number of commuter students continue to rise (Schroeder, 2004). FYE focuses on developing students' skills to adjust three major stages they encounter in their first year of college: "separation, transition, and incorporation" (Bigger, 2005, para. 1).

Gardner's research indicated that the first several weeks of college are the most critical for developing students' skills and habits because they are maintained for the length of students' undergraduate experience (Bigger, 2005). This research led to the formation of a National

Resource Center located at the University of South Carolina that serves as a think tank for first-year policy initiatives. These policy initiatives advocate for institutional FYE programs to assist with first-year students undergoing academic (adjusting to the rigors of higher education) and social transitions of entering college. Barefoot (2000) described successful institutional FYE programs as those designed with the following learning outcomes: “increasing student-to-student interaction; increasing faculty-to-student interaction, especially out of class; increasing student involvement and time on campus; linking the curriculum and the co-curriculum; increasing academic expectations and levels of academic engagement; and assisting students who have insufficient academic preparation for college” (p. 14).

Despite the research that indicates that students engaged in FYE programming generally perform academically better than unengaged students (Schroeder, 2004), FYE programs still struggle to gain credibility within an institution. Specifically, FYE programs “are housed in marginal facilities and managed by entry-level employees” (Barefoot, 2000, p. 17). Often, it is student affairs personnel who are responsible for designing and implementing FYE programs rather than faculty (Barefoot, 2000).

The Library and FYE

Since the 1970s, FYE programs have grown across many college campuses. Librarians and researchers Boff and Johnson (2002) noted FYE programs and information literacy instruction programs seemed to expand concurrently since the ACRL’s push for information literacy instruction in the late 1980s. Although the hallmarks of FYE programs were skills related to “time management, studying and test taking, issues such as health awareness or sexual responsibility, higher-level thinking such as social responsibility, ethics or critical thinking, and last, but not least, academic research and information competency” (Boff & Johnson, 2002,

p. 277), the researchers sought to determine the percentage of FYE programs with a specific library component within the curricula. The researchers obtained a listing from the National Resource Center of every higher educational institution that reported offering an FYE program and emailed all 749 schools a 15-question web-based survey to assess the level in which FYE course designers included the library in the curricula.

The researchers found that of the 368 participating institutions who responded to the survey, only 65% required the FYE course for all first-year students. Of all reported FYE courses in the survey, 86% had a library component. Overwhelmingly, the library component of the FYE course included instruction regarding how to use databases to find articles, using the library catalog, and performing Internet searches. In addition, the majority of FYE courses with a library component included hands-on activities that fostered student engagement such as library tours and scavenger hunts (Boff & Johnson, 2002).

Additional analysis led the researchers to state, “this research is encouraging in that it indicates that the majority of FYE programs (86%, $n = 315$) included in this survey sample have some type of library component, exceeding the researchers’ expectations” (Boff & Johnson, 2002). However, one of the major limitations of this study was that the survey did not articulate exactly how the library component of the FYE courses are assessed. Student assessments would yield valuable data about what elements of information literacy students are mastering and what elements they are lacking.

Positioning the Library in FYE

Expanding upon the work of Professor Gardner and researcher Barefoot (2000), Bissett (2004) posited that the first year is when students develop the skills needed for academic success. Over the past two decades, there has been a push to incorporate information literacy at the

curriculum level to ensure all students obtain information literacy instruction. For librarians that must rely on FYE programs as a means to teach first-year students, this poses a challenge. Many FYE programs do not run over the course of an entire academic year; therefore, librarians struggle to implement full information literacy components aligned to the ACRL *Framework for Information Literacy in Higher Education* within an FYE course. As such, librarians must choose the elements of information literacy that they find the most beneficial to students (Bissett, 2004). Incorporating specific elements of information literacy over the course of a single course session “is an insufficient preparation for college-level academic work, even at a freshman or sophomore level, unless it is just the first part of a planned, progressive information literacy program that continues throughout the curriculum” (Bissett, 2004, p. 14).

In a 2003 presentation to the ACRL, Gardner stressed his support for increasing the library’s presence in FYE programming. If students develop their critical thinking skills, higher-order processing skills, and evaluation skills during their first year of college, “what study skill, what habits of reading or habit of mind, is more indicative of academic success than the family of abilities that can be grouped under the heading of information literacy, or characterized by library research?” (Bissett, 2004, p. 12). Specifically, Gardner advocated for incorporating library instruction within the first few weeks of students’ first year (Bissett, 2004). Gardner’s advocacy is supported by research from Woosley (2003) who posited that the most effective time for first-year students’ skill building is between the second and sixth week of their first year of college.

Using Learning Theories to Effectively Design Information Literacy Instruction

For instruction to be effective, it must be tailored to meet the intended learners’ preferences and characteristics. Larson, Lockee, and Fuchs (2014) wrote that a common mistake

when planning instruction is to “assume what motivates, interests, and facilitates learning” for students is the same as faculty (p. 44). Understanding the existing knowledge learners have and their motivation for learning will determine what type of learning theory is used to design the instructional course. One concern in today’s study of instructional design is the difference in learning preferences between digital immigrants and digital natives. Today’s traditional undergraduate students identify as digital natives that grew up with technology and identify with technology as tools to stay productive (Larson et al., 2014). Digital immigrants learned to use technology as they grew older and self-report as “frequently uncomfortable with it” (Larson et al., 2014, p. 49).

Case study research from Johnson (2008) indicated that the learning theory founded by educational psychologist Robert Gagne could support bibliographic and information literacy instruction. Gagne’s learning theory centers on designing learning and instruction on nine central events (Johnson, 2008): (1) gain the attention of learners, (2) inform learners of learning objectives, (3) evoke the recall of existing knowledge, (4) present the content, (5) provide learning guidance, (6) elicit performance practice, (7) provide feedback, (8) assess performance, and (9) enhance retention and transfer to future tasks. Gagne’s events, according to Reigeluth, Beatty, and Myers (2016), create learner-centered instruction which focuses on personalized learning – the ability to make sense and assimilate new information into one’s existing knowledge. In a global digital-driven world, today’s economy requires “many more people to be educated to higher levels than ever before” (Reigeluth et al., 2016, p. 12) in which learner-centered instruction is the central force behind change.

Using the principles of instructional design, effective information literacy instruction utilizes experiential learning. McDonnell (2016) wrote that experiential learning – learning

through activation of new knowledge and skills – has the ability to engage and empower students to take control of their own learning, which is aligned to the principles of learner-centered instruction (Reigeluth et al., 2016). Furthermore, effective information literacy instruction elevates the library’s role in teaching and learning activities at the institutional level (McDonnell, 2016). Academic libraries must respond to the changing needs of students and higher education by become physical and virtual spaces where “communities are strengthened, scholarship is heightened, and wisdom grows” (McDonnell, 2016, p. 204).

The Value of Student Engagement in Decision Making

Villa, Thousand, and Nevin (2010) researched the effect of incorporating student input in instruction and decision making. Through their research, they discovered six critical effects: utilizing student input is aligned to teaching in the new millennium; collaboration with students creates student self-efficacy; collaboration creates a sense of democracy; collaboration with students is positively correlated to social competencies; the opportunity to collaborate with students can be across departments and at an institutional level; and student input should be valued as a resource in the current fiscal environment as schools face budget shortfalls and reduction of staff (Villa et al., 2010).

The researchers posited that the landscape of education is changing (Villa et al., 2010). The lack of teacher preparation, student satisfaction, and funding all have a negative effect on student engagement in the learning process. Student input should be viewed as a free commodity that can be used to positively impact learning experiences. The global economy requires students to be effective communicators and collaborators; incorporating student input is an effective method of developing students’ social competencies to compete in the current information and knowledge economy (Villa et al., 2010). Utilizing student input changes the

role of the student from a passive learner to an active learner that has autonomy in the learning process (Villa et al., 2010). For teachers, research indicated that utilizing student input in instruction and decision making changed the delivery of course objectives. Teachers were more apt to design learning objectives based on student strengths instead of skill or knowledge deficiencies (Villa et al., 2010).

Conceptual Framework: Effective Instructional Design Elements in Andragogical Information Literacy Programs

Given the role of Gagne's nine events of instruction, there is existing literature related to learner-centered information literacy instruction programs in academic libraries. Authentic (and experiential) learning, situated (problem-based) learning, competency-based learning, authentic learning, and flipped-classroom learning environments have been implemented in academic libraries with measurable results (Catalono, 2015; Iucu & Marin, 2014; Lacy & Chen, 2013; Laverty, 2016). Cooke (2010) stated that instruction based on andragogical principles is critical for academic librarians involved with instruction because it activates students' past experiences as a foundation for building new knowledge instead of traditional methodical teaching using drill-and-practice. Andragogical instruction allows for students to take ownership of their learning through applying their past experiences, beliefs, and interests related to their needs (Cooke, 2010).

Authentic and Experiential Learning

Educational psychologists Iucu and Marin (2014) of the University of Bucharest explored the concept and role of authentic learning in education. In their research, they stated, "aligning 21st century learning with 21st century learners is a main problem teachers face nowadays" (p. 410) and believe in aligning instruction with students' interests and goals. To do this,

educational psychologists stress the importance of authentic learning – a learning environment that is similar to what students would encounter outside of the classroom with the information or skills they are to learn. To make learning authentic, instructors and instructional designers should create activities that use real-world examples (or problems), reflection, collaboration, and transformation requiring them to use existing experiences to construct the framework for new knowledge and skills (Iucu & Marin, 2014). Authentic learning experiences transform experiences for students and instructors; students guide their learning with their intrinsic motivators whereas instructors encourage and support learning with resources, challenges, and reinforcement (Iucu & Marin, 2014).

Western Oregon University librarians, Monge and Frisicaro-Pawloski (2013), examined the common assumption that “information skills can be applied universally and learned individually” (p. 59). In their research, they stated that information literacy should be taught in the context of other applications. Today’s economy requires employees to solve problems and think critically and innovatively. Thus, teaching information literacy in the context of higher education where scholarly resources are centrally accessible through a college library means students do not have to actively search for resources using non-scholarly sources (Monge & Frisicaro-Pawloski, 2013). Therefore, librarians designing information literacy instruction should design the supportive learning activities in the context in which they will be used. To do so, librarians should work with faculty to develop individualized information literacy learning objectives that can be integrated (or supplemented) into an existing course. By reframing information literacy into “habits of mind” (Monge & Frisicaro-Pawloski, 2013, p. 65), librarians can achieve a more effective method for integrating and advocating for the advancement of information literacy.

The combined effort of authentic learning in real-world examples is a form of experiential learning. Laverty (2016) explained that experiential learning requires students to “engage actively in the experience, reflect on their learning, apply analytical skills to apply the new learning gained from the experience” (p. 22). Experiential learning requires librarians to transform their role from instructor to guide. Librarians can do this by demonstrating information literacy skills, encouraging students to perform the demonstrated skills using their own research materials, and providing reinforcement of learning (Laverty, 2016). As librarians shift from instructor to demonstrator, librarians foster open dialogue and discussion to advance students’ skill development (Laverty, 2016).

Situated and Problem-Based Learning

Catalano (2015), a researcher and librarian from Hofstra University, sought to explore how effective situated learning, learning that takes place in the context in which it is applied, can be in online library instruction. To determine if the instruction was effective, Catalano measured the transfer of learning. Morrison, Ross, Kalman, and Kemp (2013) defined the transfer of learning as the “continual application of the knowledge and skills learned” (p. 63). Catalano found through observation that many students mimicked the patterns and processes of their instructors and determined that studying the overall transfer of learning would provide insight as to how online situated learning can be individualized.

Eighty-five students enrolled in seven online library instruction courses participated in the study. All students participating in the study took a pre-test at the beginning of the course to measure their individual existing knowledge and a Motivated Strategies for Learning Questionnaire to establish their motivation for wanting to learn about library concepts (including information literacy) (Catalano, 2015). Courses in the experimental group received library

instruction taught in a situated environment in which the instructor modeled the intended research skills aligned to the learning objectives of the course. The instructor thoroughly explained how and why they behaved the way they did in the research process in terms of how students would encounter the skills in their classes or future jobs. Students were then quizzed on the instructor's behavior (to ensure they watched the instructor), participated in small group discussion boards within the course learning management system (LMS), and were asked to reflect on their learning in terms of how they would benefit from the new knowledge (Catalano, 2015). The remaining students enrolled in the control group received online instruction in a traditional instructor-led format unchanged from the original course design developed in 2007. Instructors in both courses measured individual student engagement. At the conclusion of the course, both groups took a post-test to determine the accumulated gains in knowledge.

The gaps between the learning achieved in the control and experiment groups were calculated using SPSS. Student engagement and scores from the Motivated Strategies for Learning Questionnaire were used as covariates to normalize the data. Between the pre-test and the post-test scores, students could gain up to 15 possible points. To determine if the transfer of learning happened, librarians chose to select 12.5 points as the threshold. Upon data analysis, it was found that transfer of learning occurred in 64% of the experimental group in the situated learning group, and 36% of the control group in the traditional learning environment (Catalano, 2015).

Data from this research supports the need for problem-solving and critical thinking in information literacy instruction. Instruction should take place in the context where learners will use the instructional material. Although this study also emphasized the importance of authentic learning, a significant limitation of the study is that it was performed in a for-credit class. There

can be some reasonable assumption that the credit-bearing aspect of the course was an inciting motivator for participation and engagement in the course.

Outcomes-Based Learning

Librarians and researchers Lacy and Chen (2013) of Indiana University – Purdue University Indianapolis (IUPUI) hypothesized that, since each institution is different and the need for information literacy can vary, the current structure of "one-shot" may not always be conducive to learning. The researchers found that "since most librarians are confined to the hour-long, 'one-shot' session, they often try to compensate for this limitation by covering as much material as possible" (Lacy & Chen, 2013, p. 130). Because of this cramming, learners are not always able to recall, transfer, and apply what they have learned. Instead of designing information literacy instruction to cover as much information as possible in a given time period, researchers sought to explore the impact of an outcomes-based information literacy class. In this type of instruction, librarians define a clear and measurable learning objective and "criterion-referenced testing includes the measurement of how well each learner attains the required level of comprehension and competence specified for each objective" (Morrison et al., 2013, p. 266). This type of learning is also referred to as competency-based learning.

Librarians conducting the study consulted with two IUPUI English faculty teaching the same professional writing course. Fifty-nine students enrolled in the two courses were required to choose a community problem of interest and prepare an annotated bibliography of scholarly articles to support their research. The librarian started the one-shot course by stating what the students would learn from the course (as opposed to what the librarian would teach) and the topics' benefits. Upon completion of the course and mastery of the learning objective, "students will construct a search strategy using appropriate commands in order to retrieve relevant articles

for their research projects" (Lacy & Chen, 2013, p. 132). Then, the librarian provided examples of research questions and asked students to reflect on the critical components of each question. The librarian provided a research question of high quality and modeled how to deconstruct a research question to determine the critical components. Students were then asked to deconstruct their own research questions and reflect on the process. Once students were comfortable with deconstructing sample research questions, students deconstructed their own to determine the information they were to find in order to work toward a resolution (Lacy & Chen, 2013). To meet the terminal learning objective of the course, the librarian then discussed how students would find reliable information to resolve their research questions. Using a variety of active learning exercises (physical movement, discussions, and sharing with a partner), students could experience how to use advanced algorithmic (Boolean) operators to narrow their searches to the core components of their research question.

At the conclusion of the information literacy course, the librarian distributed a survey to students to complete that captured demographic data about the students and how they use the library. Students were assigned a second survey – a written assignment that required students to reflect on their learning and how they found sources relevant to their topic. Students were asked to share their research question and the search terms they used. The librarian collected the data and assessed it to verify that the search terms supported the associated research question. Of the 59 students that participated in the study, only 30 completed the survey that assessed their research skills. This study was for the exploration of the topic only because there was no experimental control group. All 30 students that returned the assessment survey used scholarly resources provided through the library databases. However, the major flaw of the study was that

there was no way to verify if the resources found for the assignment were accurate and relevant to the research question (Lacy & Chen, 2013).

Despite the limitation, this study does provide support for the use of outcomes-based design in information literacy instruction. The research found that the "students who spent more time in the library were found to employ more searches" and "when a database was perceived as helpful, or easy to use, students submitted more search queries" (Lacy & Chen, 2013, p. 137). Although the study does not provide any evidence toward the transfer of learning impact of outcomes-based assessment, it does stress the need for reflective learning in which students share why they chose the search terms or databases that they did. With proper instructional design knowledge, librarians can create learning outcomes that require mastery of understanding and application of information literacy topics.

Limitations of the Literature Review

Despite the existing scholarship regarding the background, need, and issues in information literacy, no literature was identified that studies student input toward information literacy instruction. Saunders (2012) studied faculty perspectives of students' information literacy skills and found that although faculty agree that students are lacking necessary information literacy skills, even faculty are often absent from information literacy curriculum planning. Faculty view information literacy instruction development and delivery as librarians' responsibility. Although faculty input may be valuable to librarians when available, there are no available studies or data from students regarding their perceptions and expectations of information literacy instruction.

Conclusion of Research

Eland (2008) wrote that for information literacy instruction to be effective, it must be “developed at the curriculum level rather than the individual course level” (p. 106). Information literacy is a broad concept and all its tenets cannot be taught in one single course; therefore, librarians should seek to use authentic student-centered approaches that build from students’ existing knowledge (Eland, 2008). Librarians West, Hoffman, and Costello (2017) remarked that, as libraries adjust to servicing the needs of online learners, librarians must “transform the focus of the library from being great repositories of materials into a service-centric, one-stop shop for their patrons” (p. ix). By creating learner-centered authentic learning, librarians can foster a sense of lifelong learning and information exploration.

CHAPTER 3

METHODOLOGY

This study was designed to discover and ascertain information about the following questions regarding information literacy instruction and instructional design principles. The overarching research question in this study was: How is the *ACRL Framework for Information Literacy* aligned to first-year undergraduate student expectations of information literacy instruction? The following research questions supported the study:

1. How do first-year undergraduate students define the term information literacy?
2. How do first-year undergraduate students' past experiences and perceptions influence their definition of information literacy?
3. What concepts do first-year undergraduate students expect to obtain from information literacy instruction and how do they expect to achieve these objectives?

Conceptual Framework: Revisited

This study explored the use of active learning theories to align information literacy instruction to meet the needs of first-year college students in the digital native generation. Hardy, Day, Hughes, Wang, and Schuelke (2014) explored the concepts of active learning theory and found support for engaging students in the learning process. In traditional lecture-format courses, Prince (2004) described the student learning experience as being passive; there is little interaction between the instructor and student and students are assessed on their ability to recall information. On the contrary, active learning environments engage students and require them to collaborate with their peers and instructors, engage with the learning material through real-world examples or problem solving, and reflect upon their learning (Prince, 2004).

Further research indicated that students' attention spans in traditional lecture-style format courses tend to decrease after fifteen minutes, thus negatively affecting students' ability to retain and recall presented information (Prince, 2004). With this statistic in mind, librarians at the research institution chose to create short workshop-oriented stations during the digital and information literacy instruction program. Each workshop was seven minutes long; approximately three minutes of the workshop was a short lecture that informed students of services available and how they can help the research process. The remaining time was spent role-playing examples of how specific library services have helped students in the past. These role-playing examples and discussions were designed to help students engage with the material and understand how specific services and resources may be tailored to their research needs.

Research Method

The purpose of this study was to discover central themes and “delve into the essence” of students' perceptions of information literacy (Bloomberg & Volpe, 2016, p. 39). It was expected that the central themes presented in this study will cover a wide range of perspectives and generate a range of findings consistent with qualitative research. This study used qualitative research methods presented by Bloomberg & Volpe (2016), in which the researcher took an active role in delivering probing questions to participants and conducted the research in the natural context (thus, the library).

First-year students at the research institution were randomly enrolled into first year experience (FYE) courses regardless of gender, major, residency status, or student activity involvement. Using the random enrollment as a selection of the first-year population at the institution, the researcher chose to use a convenience sampling method to select participants for the study since the research took place over the course of a thirty-day period (rather than a

longitudinal study over the course of six months to a year). The researcher randomly selected eight to ten first-year students from two selected FYE courses to participate in a thirty-minute audiorecorded one-on-one interview to gain insight on their beliefs and perspectives of information literacy consistent with using small sample sizes for qualitative research (Bloomberg & Volpe, 2016).

Setting

The institution where the research took place is in the greater Boston, Massachusetts area. The institution employs 169 full-time faculty and over 500 staff, which makes the institution the largest employer in the town it is located. The institution has a strong reputation for its liberal arts curriculum and its pre-professional programs as reported in rankings published by organizations such as *The New York Times*, *The Wall Street Journal*, and *U.S. News and World Report*. The institution offers 47 undergraduate majors, 51 undergraduate minors, and one graduate program. Collectively, there are 2,482 enrolled full-time students; 59% of enrolled students are female, 41% are male, and 14% of enrolled students identify as a student of color. The student to faculty ratio is currently 12:1 and the average class size is 19.

The institution is a primarily residential college with nearly 90% of students residing on campus. The institution's library was chosen for the location of the study since it is centrally located on the campus. All research took place in the institution's library within a private conference room. This conference room was quiet and painted with neutral colors to create a calm and relaxing environment. Interviews were recorded using the program VoiceNotes on an iPad that was password protected and in the sole possession of the researcher while scheduling and conducting interviews. Audio recordings and written transcripts of interviews were stored in the researcher's institutional OneDrive account to minimize the risk of any data loss.

Selection of Participants

At the beginning of each academic year, first-year students were randomly enrolled in FYE with no regard to GPA, major, hometown, or age. This helped strengthen the sample of students to be representative of the entire first-year class. In late March 2019, the 36 students enrolled in the researcher's two FYE courses were emailed the Letter to Potential Participants (Appendix A) to their student institutional email addresses. This letter included information about the study, the research questions being investigated, and how the study would be conducted using interviews. This letter also stated that students were chosen to participate in the study since they were enrolled in the researcher's FYE course during the previous semester; however, students were not obligated to participate in the study and their choice to participate had no bearing on their final grades or their status as a student at the institution. Lastly, students were informed that the interviews would be scheduled at a time that was convenient for them and how their anonymity would be protected. If a student chose to participate, they were asked to reply to the email to set up an interview to begin the research study. Three students replied to the email indicating their interest. Over the course of the following ten days, the researcher sent two additional emails with the Letter to Potential Participants (Appendix A) to obtain input from eight students in total. Of the eight students that participated in the research study, five (62.5%) were female and three (37.5%) were male; additionally, all participants were Caucasian.

Participant Rights

Although students selected to participate in this research were from a required FYE course, students were informed that they could opt-out of the research at any given time with no penalty to their final grades or enrollment status at the institution. Throughout the study, students were assured of their anonymity – their names, student identification numbers, or

usernames were not collected in any recorded interview. Students were also informed that all research data, including recorded interviews, would be stored on the researcher's institutional OneDrive system. This system is protected behind monitored network firewalls and is backed up daily to minimize any unauthorized data leaks or misplacement. In addition to network security, only the researcher had access to the interview data. Any information written on paper was scanned into a PDF file and electronically stored with the research data in the institutional OneDrive system. All hard copies of information related to the study were securely shredded once they were electronically scanned.

Data Collection Methods

Interviews were conducted at each participating student's convenience in a private conference room within the library that was reserved using the researcher's name and credentials to protect the anonymity of each participant. Upon meeting in the conference room, each participant was given the Letter of Informed Consent (Appendix B) to review and sign. Each participant was offered an additional copy of the Letter of Informed Consent to keep for their records. The researcher reviewed the intent of the study and explained that at no time would they be asked to state their name, their major, GPA, or any other identifiable information. Each participant was asked if they had any additional questions about the research study before the interview took place.

Each interview lasted approximately thirty minutes and was recorded using VoiceNotes on the researcher's iPad. Once the interview concluded, the audio file was uploaded to the researcher's institutional OneDrive account and was deleted from the personal iPad to minimize the risk of any data loss or breach of confidentiality if the iPad was misplaced, stolen, or damaged beyond repair. The audio files were transcribed using Microsoft Word and the written

transcripts were also stored on the researcher's institutional OneDrive account as per IRB approval. The transcripts were electronically stored using assigned participant numbers to protect anonymity and student confidentiality.

Types of Data and Analysis

The qualitative data gathered in the interviews yielded information about how students define information literacy and how their past experiences have shaped their beliefs and perceptions of information literacy. Furthermore, data analysis uncovered common themes of what students expect from information literacy instruction and how their learning preferences affect how they want to learn. It was intended that the data gathered from the interviews would provide a comprehensive glimpse into the generational characteristics of current first-year student.

The transcripts underwent several rounds of coding. Coding was performed by hand, and all themes were entered into a Microsoft Excel spreadsheet to aid in visualizing themes and trends across the data. The first round of coding discovered the common themes in students' definitions of information literacy. These codes included specifically how students defined the term, but also the depth of responses. The second round of coding examined past experiences with information literacy instruction; the common themes represented in this round included the presence of past information literacy instruction and the general concepts taught in prior instruction. Lastly, the third round of coding discovered common themes regarding what students expected to obtain from information literacy instruction including instructional topics, instructional methods, and exercises used to reinforce learning.

Finally, the common themes generated from the three rounds of coding were compared to the six core elements of the *Framework*. Each of the common themes were examined in context

and matched to a core element of the *Framework*. To visualize the data, Appendix E was created to identify the core elements of the *Framework* matched by students' definitions and the core elements of the *Framework* matched by students' expectations of information literacy. These common themes and connections will be discussed in Chapter 4.

Potential Limitations

It is important to note that there are several limitations and biases that must be considered throughout the study. Because of the time limitations of this study, students selected to participate in the study were enrolled in the researcher's FYE courses. However, students were informed in the beginning of the academic year that their instructor was a doctoral candidate at the University of New England and planned to do research on student use and the library. Despite this, students were not informed of their potential to participate in the study until after the FYE course concluded. To mitigate any potential conflicts of interest, participants were informed that their responses would not include any identifiable information (all personal information was redacted from the interview transcripts). All potential participants were told that their participation was purely voluntary and would have no positive or negative affect on their FYE course grade or standing as a student at the research setting. The study was conducted after the FYE courses were complete to ensure participants feel that their responses would have no bearing on their course grade.

To ensure the validity of the study, participants were asked to verify the accuracy of the transcripts to avoid any error in reporting since the audio recordings were manually transcribed by the researcher. Once the audio recordings were individually transcribed into a Microsoft Word document, the researcher emailed each participant with a copy of their individual transcript. Each participant was asked to read the transcript, add any additional comments, make

any changes if necessary, and confirm all the information in the transcript was accurate. All eight participants responded that the information reflected in their individual transcript was correct. This confirmation ensured there was no error in transcription or any interjected researcher bias. Upon receiving confirmation that the information in the transcripts were correct, the researcher began coding and analyzing the qualitative data. The findings from the interviews will be detailed at length in Chapter 4.

Ethical Issues in the Study

Although all efforts were taken to protect the confidentiality of participants' identities and the anonymity of participant responses, it is important to identify the ethical issues in the study design. The researcher conducting the study used an existing random sample of students obtained from the random enrollment of FYE courses to obtain the sample participant population. Using a sample participant population of 36 students enrolled in the researcher's FYE courses poses a potential ethical issue in the study. All of the participants were familiar with the researcher and the researcher's role in the library. The study was designed this way with the assumption participants would be candid and forthright in their responses to the interview questions asked by the researcher (opposed to a neutral interviewer). However, it may also be assumed that participants may have felt subconsciously pressured to answer the interview questions based on how accurate they thought their responses would sound to the researcher (since the researcher was each participant's FYE instructor). For other academic libraries wishing to conduct a similar research study, careful consideration should be made to ensure the neutrality of the researcher or interviewer to ensure participants unbiased responses.

Conclusion

In today's culture of "fake news" and "fake media," there is more pressure than ever to ensure students are equipped with proficient digital and information literacy skills to use technology to access, evaluate, and use information in an ethical manner. Librarians can begin to fill in the gaps between what students know and what students do not know by partnering with first-year orientation programs to show that librarians can help with the research process and build students' information literacy skillset. However, understanding students' technology use and what motivates them to come to the library for learning is just the beginning of the process of building students' digital and information literacy skills.

CHAPTER 4

RESULTS

This chapter thoroughly details the results and findings from the study. Portrayed in a case study format, the results of this study are represented collectively as a group. The chapter begins with restating the research questions of the study and a brief review of the research methodology. The findings first detail how participants defined information literacy and how their past experiences using libraries in high school shaped their definition of information literacy. From there, findings of what participants expect to learn in an information literacy instructional program and how they expect to achieve those objectives are discussed. Finally, the comprehensive findings including participants' definitions of information literacy, past experiences, and intended objectives are analyzed and compared to the definition and core elements according to the ACRL *Framework*. The interpretation of these findings and implications for further action are discussed in Chapter 5.

Research Questions Investigated

This study was designed to discover insights regarding the following research questions about information literacy instruction, instructional design principles, and the role of librarians as instructors. The overarching research question was: How is the Association of College and Research Libraries *Framework for Information Literacy* aligned to first-year undergraduate student expectations of information literacy instruction? The following supplemental research questions supported the study:

1. How do first-year undergraduate students define the term information literacy?
2. How do first-year undergraduate students' past experiences and perceptions influence their definition of information literacy?

3. What concepts do first-year undergraduate students expect to obtain from information literacy instruction and how do they expect to achieve these objectives?

Interview Process & Data Collection Methods

Of the 36 students randomly invited to participate in the study, eight students consented to participate and interview with the principal investigator. Participants were informed their individual interview would last approximately 30-45 minutes. Interviews occurred during the first week of April 2019 at each participant's convenience. For each participant's comfort and convenience, interviews took place in a small conference room on the first floor of the library at the research institution. The conference room was booked using the research institution library's internal booking tool, LibCal, using the principal investigator's name to protect each participant's anonymity.

Upon each participant's arrival in the conference room, they were quickly briefed on the purpose of the study and how their individual responses would be collected, kept confidential, and analyzed by reviewing the Letter to Potential Participants (Appendix A). Then, each participant was given the Letter of Informed Consent (Appendix B) and as much time as needed to review the information. Each participant was asked if he or she had any questions about the study and to sign the document to indicate their consent to participate. After each participant signed the Letter of Informed Consent, the principal investigator signed the document indicating the participant voluntarily consented to participate. All participants were given a paper copy of the Letter of Informed Consent to retain for their records. To begin the interview process, the principal investigator reminded each participant the interview would be recorded, there were no right or wrong answers, the participant could choose not to answer any question, and that they would be asked ten predetermined open-ended interview questions (Appendix C) that they could

ask to be re-read or clarified at any time. Participants were also informed that they could stop the interview at any time without penalty.

Interviews were recorded with the principal investigator's personal iPad using the internal VoiceNotes application. Using the interview protocol (Appendix C), the principal investigator began asking each interview question. Each participant was given time to think about each interview question and time to formulate their individual responses. After answering the last interview question, participants were asked if they had any additional information (e.g., comments, anecdotes, questions, etc.) they would like to add to the study and were thanked for their time. At this point, the principal investigator stopped the recording. Before each participant left the conference room, they were reminded that they may request via email the results of the study upon completion.

After each participant left the conference room, the principal investigator saved the interview audio file with a unique name corresponding to the participant (e.g. Participant 1 Recording, Participant 2 Recording, etc.) and saved it to their individual institutional OneDrive. Once all interviews were conducted, each interview was transcribed into a Microsoft Word Document. Individual transcripts were emailed using their student email account at the research institution to the respective participant as part of the member-checking process. Participants were asked to verify the accuracy of the content in their interview. Once all transcripts were verified, the principal investigator began analyzing the data (detailed in the following "Analysis Method" section).

Description of Participants

Each FYE class is randomly enrolled by the institutional registrar with no regard to major, resident status, race, or gender. Using this random enrollment, thirty-six students in the

principal investigator's FYE classes were invited to participate in the study. Eight first-year students (five females and three males) consented to participate in the study. To ensure participants' identities were not revealed, no identifiable information was collected as part of the interview process. Participants were not asked to disclose their student identification number, display their student ID, or state their major, GPA, hometown, or resident status at the research institution. Pertinent information of each participant that will be used throughout the presentation of results is detailed in Table 1.

Table 1

Description of Participants

Participant Number	Gender	Past Experience with Information Literacy Instruction
1	Female	Yes
2	Female	No
3	Male	No
4	Female	Yes
5	Female	Yes
6	Male	Yes
7	Female	Yes
8	Male	No

Analysis Method

Once the interview data was transcribed into eight separate Microsoft Word documents and verified by the respective participant, the principal investigator assembled the individual interviews into one comprehensive document to analyze the data at the group level by each research question (Appendix D includes a visualization of the interview questions that support each research question). The comprehensive document was organized by each research question and its supportive interview questions. Respective participant responses were identified as

Participant 1, Participant 2, etc. for each interview question. The comprehensive document was printed in preparation for the coding process which the principal investigator completed by hand.

Using Saldaña's (2015) methodology, there were two rounds of coding completed for each research question. Using the initial coding method which "breaks down qualitative data into discrete parts, closely examines them, and compares them for similarities and differences" (p. 115), each participant's response was coded in relation to the aligned research question. Codes similar in definition were combined into a single encompassing characteristic. After the first round of initial coding was completed, the data underwent a second round of coding using concept coding. Concept coding was used to generate "a bigger picture" of the data (p. 119). In contrast with different styles (such as affective coding methods, evaluation coding methods, etc.), the principal investigator chose concept coding because the overarching concepts generated from each research question were needed to determine how participants' definitions of information literacy, their past experiences, and their expectations are aligned to the ACRL *Framework*, as later discussed in the presentation of results. The unique codes generated from the initial coding and concepts from concept coding are enumerated below in Table 2.

Table 2

Codes and Concepts Generated from Initial and Concept Coding Methods

Research Question	Unique Codes	Concept Codes
RQ1. How do first-year students define the term information literacy?	18	9
RQ2. How do first-year undergraduate students' past experiences and perceptions influence their definition of information literacy?	21	8
RQ3. What concepts do first-year undergraduate students expect to obtain from information literacy instruction and how do they expect to achieve these objectives?	23	10

The unique concepts aligned with each research question were then analyzed using initial coding methods to identify the relationships between each concept and generate a thematic overview of each research question. Three overarching themes were identified regarding the research questions this study sought to answer:

- First-year undergraduate students generally define the term information literacy to be the ability to use scholarly resources to interpret and ethically utilize information.
- Students' past experiences created a baseline of information literacy skills and knowledge from which to build upon.
- Students expect to learn how identify and locate different types of resources, how to evaluate authority, and how to distinguish the type of information needed to solve a problem. Overwhelmingly, students expect to learn through a combination of visual methods and hands-on learning instructional methods to achieve the intended learning objectives in an information literacy course.

These overarching themes and how they relate to the *ACRL Framework* are discussed in the following sections.

Presentation of Results

The following sections present the collective findings related to each of the research questions. The first section answers how first-year undergraduate students define the term information literacy. Students' definition of information literacy is further investigated in the second section as students' past experiences are examined in relation to how students formed their definition of information literacy. The third section explains what students expect to learn from information literacy instruction and the instructional methods they prefer in order to achieve the intended learning objectives. Finally, students' definition of information literacy and

what they expect to learn in an information literacy instructional program are aligned in relation to the ACRL *Framework*. The alignment will be used later in Chapter 5 to recommend instructional concepts needed in information literacy instruction to bridge gaps between students' existing definition of information literacy and students' expectations of information literacy instruction.

RQ1: How Do First-Year Undergraduate Students Define the Term Information Literacy?

To ascertain students' definition of information literacy, each interview started with the four following interview questions in the exact sequence: IQ1, IQ2, IQ3, and IQ4 (Appendix C includes the list of interview questions asked and the interview protocol performed). IQ1 was designed to obtain a list of keywords or phrases that students identify with the term information literacy. IQ2 asked students to define the term information literacy using their own words. Students were asked to reflect on how their definition or understanding of information literacy has changed since they arrived at the research institution in IQ3. Finally, students were asked to describe how they value information literacy as a first-year student in IQ4. Collectively, these keywords, definitions, thoughts, and values were analyzed using initial coding and pattern coding methods to determine unique codes, core concepts, and an overall theme to students' definition of information.

When participants were asked what keywords come to mind when they hear the term information literacy (IQ1), six participants (Participants 1, 2, 4, 5, 6, and 8) responded with the specific term *books*. Participant 8, a male, expanded his thoughts on what keywords come to mind when hearing the term information literacy and said, "I would think of books and different literature as ways to help you understand different information." The remaining two participants (Participant 3 and 7) identified keywords relating to information literacy through the lens of

technology and skillsets. Participant 3, a male, used the term *computers* as an information literacy keyword and further explained his thought as “knowing how to use computers to find what you need.” Participant 7, a female, said, “Information literacy. I think of being able to verify the information you’re actually reading,” leading to her perception of information literacy as a skillset. Collectively, the concepts related to the keywords used to define information literacy were resources (books), technology (computers), and critical thinking skills to question authority of information.

Participants were then asked how they defined information literacy in their own words (IQ2). Students defined information literacy through three different concepts: inferring and interpreting information within the context it is needed, using scholarly literature and resources, and using technology to locate information. Seven of the participants provided their response (Participant 6 chose not to answer this question). Of the seven participants who answered this question, three participants (Participants 1, 7, and 8) defined information literacy as the ability to infer and interpret information within the context it is needed. Participant 1, a female, succinctly defined information literacy as “being able to understand information” whereas Participant 7, a female, defined information literacy in a broader sense as “being able to infer on the information that you’re given, based off the outlet it’s coming from, and being able to make your own decision based off the information that you’ve gotten.” Three other participants (Participants 2, 4, and 5) defined information literacy as the ability to use scholarly literature and resources to obtain information. Participant 4, a female, defined information literacy as “using literature, whether it be books, magazines, or maybe even like an online database on just about any subject you can think of that you might need information on.” Lastly, Participant 3, a male, defined information literacy as the ability to use technology to find information. Participant 3’s

definition is aligned to his previous response of “computers” as a keyword related to information literacy.

In addition to identifying keywords related to information literacy and sharing their definition of information literacy, participants were also asked to explain how they value information literacy as first-year students (IQ4). Seven participants chose to answer this question (Participant 8 did not feel his definition of information literacy was adequate enough to answer this question), and all seven valued information literacy as important. However, although the responding participants believed information literacy to be an important skill, Participants 5 and 6 could not articulate why. Participant 6, a male, explained that information literacy was “a big, conceptual thing” that was too hard to translate into words. Participants 1 and 2 valued information literacy as an important skill needed to aid in the transition from high school to higher education. Participant 2, a female, explained how she valued information literacy as an important skill because assignments in college were more rigorous and having the skills “to find just any information as far back as you need it, is really, really helpful.” Participants 3 and 4 valued information literacy as important because of the way technology is shaping how students obtained information. Participant 4, a female, described information literacy as an important skill because “the Internet is something that is pretty massive in everybody’s education now. I know my dad would talk about not being able to find information during his time in college and now we can search everything.”

As a group, the participants defined information literacy as an important ability to use technology to find scholarly resources to infer and interpret information within a given context. Participants in this study valued information literacy as an imperative skill needed to utilize information effectively. The next section will examine participants’ past experiences with

information literacy to determine if there are any relationships present between past experiences and participants' definition of information literacy.

RQ2: How Do First-Year Undergraduate Students' Past Experiences and Perceptions Influence Their Definition of Information Literacy?

To further explore students' definition of information literacy, participants were asked four interview questions (IQ5, IQ6, and IQ3) regarding their past experiences with information literacy in high school. These interview questions asked participants to reflect on their past experiences in high school and create connections with those experiences to their current experiences as a first-year student. Participants' experiences were analyzed in relation to their definition of information literacy.

In IQ5, participants were asked if they had any type of formalized library instruction during their time in high school and whether the instruction had an effect on their definition of information literacy. Six participants (Participants 1, 3, 4, 5, 6, and 7) stated that they had library instruction in high school, whereas Participants 2 and 8 stated they had no type of library instruction in high school. Of the six participants who received library instruction, three participants (Participants 1, 4, and 5) reported the library instruction was solely focused on how to access information with little regard to the authenticity, credibility, or validity of the information, but had no bearing on their definition of information literacy. Participant 1, a female, explained that her library instruction in high school entailed reviewing online resources and databases. However, when asked how it affected her definition of information literacy, she said, "I feel like it gave me a foundation, maybe, of understanding what the word means even though I've honestly never heard it before." The remaining three participants who received library instruction in high school (Participants 3, 6, and 7) reported that their library instruction

was centered on using information responsibly by learning how to cite information ethically.

Participant 3, a male, explained that although his past library instruction was centered on using tools to cite information, “it didn’t completely form my definition until coming here.”

IQ6 also asked participants to reflect on their past experiences in high school. Specifically, IQ6 asked participants to describe how their past experiences in high school affected their current value of information literacy as first-year undergraduate students. Participants 1, 3, and 4 described their experiences as important for creating a baseline of skills and knowledge to which build upon as first-year students. Participant 1, a female, explained, “It gave me a background to knowing what to do before. I was able to come into the [research institution library] and take advantage of all it offers, so that was nice.” Participants 2, 5, and 8 described their experiences as giving them the confidence to ask for research help from librarians when needed. Participant 5, a female, reflected on her experience and said, “I think it really prepared me for what I would find here. The library is similar to theirs. It helped me find things and know how to ask certain questions if I need help.” Lastly, Participants 2 and 7 described their past experience as valuable because it gave them the self-confidence to apply the skills and knowledge obtained in high school to their courses and research assignments in college.

Finally, IQ3 asked participants to reflect on their growth as students since first enrolling as a first-year matriculated student at the research institution. Participants were asked if their definition of information literacy changed since they became first-year students and why. Half of the participants (Participants 3, 4, 6, and 8) responded they believed their definition had not changed. Participant 3, a male, explained his definition of information literacy had not changed “because I don’t think I heard of the term before coming here [research institution].” The remaining four participants (Participants 1, 2, 5, and 7) reported their definition of information

changed because of the increased number of resources and amount information available to them contrasted with what they had access to in high school. Participant 1, a female, described her change in the definition of information literacy because “there’s much more stuff available and the library has a lot of resources to help.” Participant 5, a female, also described her change in her definition of information literacy because “the information I’m looking at is more useful and covers more relevant topics.” Of the four participants (Participants 1, 2, 5, and 7) who reported their definition of information literacy changed because of the increased number of resources and amount of information available, three participants (Participants 1, 2, and 5) identified resources as a keyword related to information literacy.

RQ3: What Concepts Do First-Year Undergraduate Students Expect to Obtain from Information Literacy Instruction and How Do They Expect to Achieve These Objectives?

The remaining four questions of the interview focused on what concepts students expected to learn in an information literacy instructional program and the instructional methods they preferred. This first part of this section asked students to reflect on their definition of information literacy, experiences, and values to determine what should be taught in an information literacy course. Lastly, the second part of this section asked students to explain how they learned best (practices, methods, etc.) and how they thought information literacy should be taught for first-year undergraduate students.

IQ7 asked participants to reflect on their experiences and values of information literacy and share what they believed to be the most important concepts taught in an information literacy instructional course. The majority of participants (Participants 1, 2, 3, 5, and 6) stated that finding credible sources should be the most important thing taught in the program. However, of the five participants who believed finding resources to be the most important concept of

information literacy instruction, Participants 1 and 5 believed that learning to find credible resources should not be limited to what the library has to offer. Participant 1, a female, explained that information literacy instruction should include learning “about resources and using different media websites, as well as books. Maybe even Wikipedia, stuff like that. I guess it should include some things that people don’t really consider that could be helpful.” The belief that information literacy instruction should include how to find a variety of resources was further corroborated by Participant 5, a female, who stated that the instruction should include “how to get away from the common [resources], or find information that would be different and unique.” Participants 4 and 8 believed information literacy instruction should focus on how to use information ethically by making citation and referencing of information a priority. Participant 7 shared that information literacy instruction should be taught at the conceptual level to develop students’ critical thinking skills. She elucidated, “Learn to have an open mind. Double check what you’re reading. That’s the first thing. Double check who’s writing it, who’s publishing it, who’s it about. Learn to look for conflicting information.”

Participants were asked to describe how they learn best in IQ8 and encouraged to share an example to support their belief. All participants stated they prefer to learn through visual cues such as a presentation, notes on a board, etc. Participants 1, 3, 4, 7, and 8 elaborated on how visual learning is best for them when supplemented with hands-on examples and simulations. Participant 4, a female, elaborated,

I’m definitely a visual learner, I think. I really need to see examples. I tell my professors all the time that I really need to see examples. I need to see them do the entire problem out so I can copy it in my own problem, and then learn through seeing it.

Participant 3, a male, noted that using hands-on learning exercises to learn lets him “do it a few times and then getting used to where it finally solidifies in my head where I don’t have to learn it every time.”

With instructional methods in mind, IQ9 asked students to share what instructional methods work better than others. This open-ended question allowed students to reflect on what instructional methods were effective for them in the past. Three participants (Participants 1, 2, and 6) shared their belief that hands-on learning was the most effective instructional method.

Participant 2, a female, said, “A lot of hands-on examples, like storytelling. I think it helps to learn a subject better.” Participant 3 believed learning through visual cues worked best.

Participant 8 believed that a combination of visual and hands-on learning was best. He said,

I kind of prefer a combination of the two. So, they have a PowerPoint up that says this is what you’re learning, and they do a real example with the PowerPoint still up that shows this is how you use what you’re learning. Sometimes there’s just so much stuff going around, I look at what I’m learning and know what I’m learning, but I don’t know when to use it, or why to use it.

Lastly, Participant 4 explained that gamification is an effective learning method because it engages students and encourages them to get more involved with their learning than they can with a passive PowerPoint presentation.

Participants 5 and 7 did not share what they believed to be an effective instructional method. Instead, they shared the belief that the flipped classroom model in which students watch lectures outside of the classroom and complete examples in the classroom was not an effective instructional method. Participant 7 stated that the instructional method is ineffective if students do not do the work outside of the classroom. Participant 5 shared that the flipped classroom

method is confusing because she could never remember the questions she had about the material by the time she got to the classroom where the instruction took place.

After sharing their definitions of information literacy, how they value information literacy, and how they learn best, participants were asked to share what instructional methods would work best for an information literacy program in IQ10. The majority of participants (Participants 1, 2, 3, 7, and 8) agreed that hands-on learning (working through instructor-led examples) was the most effective instructional method. Participant 2, a female, shared an example of how a librarian could lead a class “where they all have their computer with them, go through step-by-step.” Participant 5 shared that learning through visual cues (such as a PowerPoint presentation or a website demonstration) was the most effective instructional method. Lastly, Participants 4 and 6 shared that it should be left to the instructor to teach whatever way is most comfortable for them.

Alignment to the ACRL *Framework*

The overarching goal of this study was to determine how students’ definitions and perspectives of information literacy are aligned to the ACRL *Framework*. The ACRL *Framework* grew “out of a belief that information literacy as an educational reform movement will realize its potential only through a richer, more complex set of core ideas” (ACRL, 2016a, para. 1). Thus, the six supporting core ideas (frames) were designed to shape learning outcomes associated with information literacy skills and knowledge instruction. The six frames set forth by the ACRL are defined as:

1. Authority is constructed and contextual;
2. Information creation as a process;
3. Information has value;

4. Research as inquiry;
5. Scholarship as conversation;
6. Searching as strategic exploration (ACRL, 2016a, para. 2).

To fully analyze how students' definitions and perceptions of information literacy are aligned to the ACRL *Framework*, results gathered in the previous sections (RQ1, RQ2, and RQ3) will be used to further explore the alignment.

At the beginning of the study, the principal investigator hypothesized participants would have a multi-dimensional definition and set of perspectives toward information literacy. This hypothesis was based on participants' successful completion of the FYE course that included a digital and information literacy component in the curriculum. As evident in RQ1, participants had a singular-focused definition of information literacy. Participants defined information literacy as the ability to use technology to find scholarly resources to infer and interpret information within a given context. However, when asked what concepts participants believed to be the most important parts of information literacy instruction (RQ3), participants believed in a multi-dimensional instructional program. They believed information literacy instruction should focus on finding and evaluating resources while developing critical thinking skills to seek and evaluate information from uncommon sources. Appendix E is a visualization of how the components of participants' definition of information literacy and components expected in information literacy instruction are aligned to the six frames of the ACRL *Framework*.

Table A2 in Appendix E shows participants' definition of information literacy aligned with three different frames. Participants included the ability to "infer and interpret information within a given context" as part of the definition of information literacy. This aligned with two frames: (2) information is created as a process, and (3) information has value. Participants also

defined “finding scholarly resources” as part of the definition of information literacy. The ability to find scholarly resources aligned to the sixth frame: searching as strategic exploration.

Although participants’ definition of information literacy aligned to three frames, it did not align to the following frames: (1) authority is constructed and contextual, (4) research as inquiry, and (5) scholarship as conversation.

Conversely, participants’ expectations of information literacy instruction aligned to five of the six frames. Participants identified “finding credible resources within a specific context” to be a critical component aligned to the first three frames: (1) authority is constructed and contextual, (2) information creation as a process, and (3) information has value. Participants also believed the ability to “utilize different methods and channels of obtaining information from nontraditional sources” is an important part of information literacy instruction aligned to the sixth frame: searching as strategic exploration. On a larger conceptual scale, participants also believed information literacy instruction to “encourage the use of opposing information to develop one’s critical thinking skills” aligned to the fourth framework: research as inquiry.

Conclusion

The study revealed several important findings regarding first-year undergraduate students’ definition and perceptions of information literacy. First and foremost, students’ definition of information literacy was primarily focused on interpreting information and finding scholarly resources. Although six of eight participants had formal library instruction in high school, the findings indicate there was no connection between past instruction and a complete definition of information literacy. Despite participants’ inability to fully define the term information literacy, participants identified core components of information literacy they expected to be included in a comprehensive information literacy instruction program. These

findings are used in Chapter 5 to connect to the literature review from Chapter 2 and develop recommendations for future studies.

CHAPTER FIVE

RESEARCH FINDINGS AND CONCLUSION

The purpose of this chapter is to first connect the research findings developed in Chapter 4 to the literature review and conceptual framework in Chapter 2. This will include how proficient use of technology is not connected to information literacy knowledge and that the need for digital literacy continues. There is a lack of connection between library instruction in high school and information literacy knowledge and the positive relationship between student expectations of information literacy and workforce preparedness skills. Participants' instructional methods preferences will be compared to existing learning theories posited in the conceptual framework to propose recommendations for action and study to develop effective and engaging information literacy programs. Next, this chapter will identify the limitations of the study. Lastly, the chapter concludes with the importance of the study and how findings can be used to advance information literacy instruction within academic libraries in higher education.

Research Findings

The research findings will be described at the conceptual level presented in Chapter 4. The first three findings will detail technology use and information literacy knowledge, the impact of past library instruction on information literacy knowledge, and how the concepts participants expect to obtain to learn in information literacy instruction are aligned to workforce preparedness. The second part of this section will detail how student learning preferences are supported by adult learning theories used to create effective, engaging instruction.

Overall, the results from the study demonstrated that students have a general conceptual sense of information literacy, although they could not formally define the term. Students could explain why information literacy was important to them as first-year undergraduates and how

they valued information literacy skills. Findings showed that participants defined information as surface-level skills and knowledge but could not articulate how those skills translated to tasks other than completing research assignments as students. Although students could not formally define the term, their expectations of concepts taught in an information literacy course were aligned to the *ACRL Framework*.

Technology Use and Information Literacy Knowledge

One of the biggest results from the study showed that participants defined information literacy through three different concepts: inferring and interpreting information within the context it is needed, the ability to use scholarly literature and resources, and the ability to use technology to locate information. Yet, despite participants' focus on technology as a critical element of information literacy, participants were still unable to accurately define information literacy. The ACRL (2016a) defined information literacy as, "the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning" (p. 8). Thus, as students continue to define information literacy with an emphasis on technology, it is important to note that fluency with technology is not positively related with information literacy knowledge. This is corroborated by research conducted by Sharkey & O'Connor (2013), that theorized there is no correlation between undergraduate students' technology and information literacy knowledge and skills.

Additional results from the study indicated participants expected to learn different methods and channels of obtaining information from nontraditional sources. Students still need instruction on how to access and interact with information across different channels. This is consistent with findings that put an onus on instructors to "innovate pedagogically to help

students develop a high level of aptitude to interact fluently with both information and technology” (Sharkey & O’Connor, 2013, p. 33). Students’ searching strategies are often only completed at the surface-level using common terminology related to the information sought. Students rarely look past the top common results for information and are unlikely to use alternative or uncommon sources (Lanning & Mallek, 2017; Sharkey & O’Connor, 2013). The findings from participants in this study expressed students’ expectations to learn how to use different channels to access credible information which implied students’ interest in thinking conceptually and critically about the tenets of information literacy.

Past Library Instruction and Information Literacy Knowledge

Results from this study showed six of the eight participants (75%) had a form of library instruction in high school. Despite this statistic, participants were unable to thoroughly define information literacy (both as a knowledge and a skill). This would indicate that participants’ experiences with library instruction in high school had no bearing on their definition of information literacy. Research from Saunders et al. (2017) stated only 14% of incoming undergraduate freshmen were considered informationally literate. Without a proper introduction to information literacy in high school, students “struggle with college-level research; knowing where to start their research; narrowing broad topic searches; and determining credible sources” (Lanning & Mallek, 2017, p. 444). These struggles were presented in participants’ expectations of an effective information literacy course. Specifically, participants expected to learn how to find credible resources within a specific context and how to utilize different methods and channels to find information.

The lack of connection between first-year undergraduate students’ past experience with library instruction and their definition of information literacy is further supported by existing

scholarship (Head, 2013; Saunders et al., 2017). Head (2013) of Project Information Literacy, a nonprofit organization aimed at better understanding college and university students' information literacy skills, conducted a study of thirty-one first-year undergraduate students to understand the transfer of information literacy skills from high school to higher education. This research indicated that "most freshmen said their research competencies from high school were inadequate for college work" (p. 3). Saunders et al. (2017) argued that today's high school students should be exposed to information literacy concepts due to its inclusion within the Common Core Standards. However, first-year undergraduate students are still entering colleges and universities unequipped with the necessary information literacy skills. While researchers may dispute the exact cause for incoming first-year undergraduate students' lack of information literacy skills and knowledge (Head, 2013; Lanning & Mallek, 2017; Saunders et al., 2017), this study indicated there appears to be no connection between experiences in high school and definitions of information literacy.

Student Expectations and Workforce Preparedness

The results from this study indicated students valued information literacy on a micro level as an important skill needed to access information and effectively use it to conduct research. Yet, students expected to learn information literacy concepts on a macro level that could be applied to tasks associated outside of higher education. The findings from this study showed that students expected to learn how to find credible resources within a specific context, how to use alternative sources to find information, and how to develop critical thinking skills through examining opposing information. While these skills may be applicable for completing research tasks as undergraduate students, the skills students expect to learn in an information literacy course are also applicable to workforce preparedness and success in the global economy.

Data gathered from a survey of private sector human resource professionals by Raish and Rimland (2016) revealed that employers want employees with the following skills: critical thinking, using quality information, collaboration, technology, gathering information, and innovation. Of these six skills, students expect to learn about critical thinking, using quality information, and gathering information. Thus, for information literacy instruction to be all-encompassing and applicable for workforce preparedness, librarians should also consider incorporating technology, collaboration, and innovation skills into the information literacy curriculum.

Students' Learning Preferences: Active Learning in Information Literacy

The results from the study showed the overwhelming majority of participants preferred information literacy instruction to take place through hands-on learning and using real-world examples. Participants expressed the need for visual learning through instructor-led sessions in which the instructor works through examples which allows students to draw their own inferences and connections to the course material. These preferences are aligned with the tenets within the andragogical active learning theory used in the conceptual framework in Chapter 2.

The active learning theory engages students to interact with the learning material. This occurs through the use of solving real-world examples that students would encounter with the use of the learning material (Lokse et al., 2017). While learning by doing may be an instructional method unfavored by instructors, it is not merely a fad or a simple preference. The active learning theory posits that by learning through real-world examples, students create connections with the learning material with their past experiences and beliefs toward the learning objective (Detlor et al., 2012; Schunk, 2012).

Active learning through the use of real-world examples is also a form of authentic learning and experiential learning. Authentic learning stresses the importance of designing instruction in the context in which it should be used (Monge & Frisicaro-Pawloski, 2013). This is evident through student preference and expectation of using examples and problem-solving of what they encounter in other courses. Successful completion of examples strengthens students' problem-solving and critical thinking skills, and motivation (Lavery, 2016).

Utilization of the active learning theory shifts the role of the librarians tasked with information literacy from an instructor to a guide as students develop and strengthen their information literacy skills through examples and problem-solving (Prince, 2004). This process also encourages students to reflect on and discuss the connections with past experiences and how the newly acquired skills are connected to their current experiences (Lavery, 2016). The newly formed connections with current experiences are instrumental for students to strengthen their conceptual sense of information literacy that can be applied to experiences outside of the classroom and ultimately in the workforce.

Recommendations for Further Action

Results and findings from this study propose the continued use of the ACRL *Framework* as a guide for designing information literacy learning objectives, the use of active learning theory to design information literacy instruction, and the integration of digital literacy in information literacy instruction. Implementing these recommendations will aid in the creation of an engaging and interactive information literacy instructional program designed for the digital native generation. Equipping students with adequate information literacy skills prepares them for success in higher education and the workforce.

In Chapter 4, participants expressed their expectations for information literacy instruction that would teach them how to find and use credible resources, develop their critical thinking skills, and how to access information from alternative sources. These three concepts were aligned to five of the six frames of the ACRL *Framework*: authority is constructed and contextual; information creation as a process; information has value; research as inquiry; and searching as strategic exploration. The only frame with which students did not identify their expectations is scholarship as a conversation. Incorporating dialogue and discussion within the information literacy curriculum can foster a sense of collaboration between students as they develop their information literacy skills. The collaboration skills developed through open dialogue and discussion regarding resources and information are also skills that employers seek in future candidates (Raish & Rimland, 2016; Weiner, 2012).

Results and findings from the research indicated students' preference for active learning environments. Not only did students believe active learning methods were the best way to teach information literacy, they also stated that they learn best through active learning. Librarians should take into careful consideration ensuring the course has ample time to practice with real examples while the librarian guides students through each step. Traditional instructor-led lectures don't necessarily activate students' critical thinking skills and promote a sense of self-efficacy (Lokse et al., 2017). For librarians unaware of how to incorporate active learning in their pedagogy, library administrators should seek to provide professional development and training. Holmes, Collins, and Rutherford (2017) found that "student-centered teaching can improve students' memory as well as raise their consciousness of communication strategies, which is a skill often overlooked by Generation NeXt [digital natives]" (p. 112).

Lastly, there should be a continued emphasis on integrating digital literacy skills with information literacy instruction. Findings from the study indicated that proficiency with technology is not connected to proficiency using technology for research or informational purposes. This is consistent with findings that digital natives are assumed to be advanced users of technology and aware of how technology can be used to solve problems and obtain information (Erstad, 2015). Thus, implementing digital literacy benefits students. Students' exposure and understanding of technology is increased. Students can learn how to become advanced users of technology to solve problems and obtain information. Although technology will continue to evolve, and the devices used to obtain information may change, students equipped with information and digital literacy skills will know how to use technology efficiently for information and communication purposes for academic and workplace success.

Recommendations for Further Study

This study is just the beginning for understanding first-year undergraduate students' definition and perspectives of information literacy. To obtain a deeper understanding of students' definition and perspective, further studies should aim to fully identify the specific information literacy skills and knowledge first-year undergraduate students have when they begin their undergraduate coursework. This data can be obtained by a pre-assessment or survey that is further analyzed to develop a sense of the knowledge and skills students have from high school. Once the assessments are analyzed, librarians will have a greater understanding of the exact skills students learned in high school and the skills students lack. Identifying lacking skills is critical to ensuring the curriculum bridges the gap between students' existing and developing knowledge and skills.

Additionally, this study did not obtain any personal or identifiable information from students during the interview process. Specifically, students were not required to disclose their academic major or minor. Based on the omission of student areas of study or academic major or minor, and the small number of participants, there was no way to ensure all academic departments were represented in the study. Having academic information is insightful for future studies to understand the research and assignments associated with majors. Information from the requirements of different majors can be used to further study students' information literacy perspectives and expectations.

Lastly, this study only included participants once during their second semester at the research institution. As part of the interview process, participants were asked to reflect on their experiences in high school and how those experiences shaped their definition and perceptions of information literacy. Follow-up interviews can be done to ascertain how experiences in college can be completed to fully distinguish if there are any relationships between experiences with information literacy and students' perspectives.

Limitations

Although this study is the starting point for understanding students' perspectives of information literacy, there are several limitations that must be noted. First and foremost, this qualitative study sampled eight first-year students from a college with over 600 first-year students. To obtain a more accurate understanding of students' experiences and expectations of information literacy instruction, the sample size should have been larger to be more representative of the first-year population. Due to the time restraints on this study, obtaining a sample size above the 8-10 range was not feasible. The eight students that participated closely resembled the gender ratio of the student population at the research institution, but it is important

to note that all participants were Caucasian which is not representative of the first-year student population (or research institution population). Inclusion of the perspectives of students with different demographic backgrounds may lead to different results.

Lastly, this study took place at one research institution. The study took place at a small, private college in the metro Boston, Massachusetts area. It cannot be assumed that the demographics of this research institution are indicative of the demographics of all institutions or the population of first-year undergraduate students at the national or global level. It can be assumed that first-year undergraduate students' experiences and perspectives of information literacy may be different at public or larger institutions compared to the experiences and perspectives of participants in this study.

Conclusion

The digital native generation has access to more information than ever before in human history. Technology continues to evolve how people obtain information and communicate with one another. Regardless of how technology changes and the modes used to obtain information or communicate, the need for information literacy skills remains consistent. This study showed that past experiences with library instruction and technology were not connected to being able to fully define information literacy. To ensure students are equipped with adequate information literacy skills to academically succeed in college and, ultimately, the workforce, librarians should employ interactive methods for students to actively engage with the learning material. Students are no longer passive learners; they don't want to learn in traditional instructor-led lectures. Instead, students want to learn through engagement with learning material by working through practice examples and using real-world problems they expect to encounter.

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APPENDIX A

Letter to Potential Participants

Dear First-Year Student,

In addition to my professional responsibilities as the library systems technician at [name of research institution] and an FYE instructor, I am also a doctoral student in the University of New England's Transformative Leadership program. I am conducting a research project titled, "Examining Student Perspectives on Information Literacy." I would like to invite you participate in this research study which will be conducted with a sample of six first-year students. The purpose of my study is to discover and ascertain student expectations of information literacy and how these expectations are aligned to the Association of College and Research Libraries *Framework for Information Literacy*. Data gathered in this study will help provide specific anecdotal information that can be used to tailor information literacy instruction to meet student expectations and learning preferences. Research in this area is limited; and, as a result of my research, I intend to pose the following questions:

1. How do first-year undergraduate students define the term information literacy?
2. How do first-year undergraduate students' past experiences and perceptions influence their definition of information literacy?
3. What concepts do first-year undergraduate students expect to obtain from information literacy instruction and how do they expect to achieve these objectives?

Participating in this research will allow you to share your thoughts on how you define information literacy and how information literacy instruction can be effectively delivered to meet first-year students' expectations and needs. I am inviting you to be a part of this research study based on your successful completion of FYE and past participation in the [research institution]'s Digital and Information Literacy Week program. You will be asked to participate in a one-on-one interview that includes questions related to the following:

- Information literacy
- Library instruction
- Learning preferences

All information will be kept secure. At the end of the study, a report will be generated to communicate the findings of the research. Your involvement in this study is completely voluntary. Your participation in the interview indicates your informed consent to participate in my research study. The information gathered from this study will be published as group results and cannot be traced back to one professional. The interview will take approximately 30 - 45 minutes to complete and it will be scheduled at your convenience. There is no penalty if you choose not to participate. You may choose to stop participation at any time, or not to participate at all. You can decide not to participate, and your decision will not affect the benefits or services to which you are otherwise entitled in any way. Your participation will be kept anonymous. Pseudonym(s) of your choice will be used during the interview. Identifiable information

regarding [name of research institution] and students will not be included in the interview transcripts or the final research report.

If you have any questions about participating in this research study, do not hesitate to ask. I can be reached at kbrenner1@une.edu. Thank you for your consideration.

Sincerely,

Kathleen Brenner
Researcher

APPENDIX B

Letter of Informed Consent

Dear First-Year Student:

As a doctoral student completing my dissertation study through the University of New England, I thank you for your willingness to participate in my research study titled, “Examining Student Perspectives on Information Literacy.” Please review all the information in this letter before signing your consent to participate.

Research Questions:

1. How do first-year undergraduate students define the term information literacy?
2. How do first-year undergraduate students’ past experiences and perceptions influence their definition of information literacy?
3. What concepts do first-year undergraduate students expect to obtain from information literacy instruction and how do they expect to achieve these objectives?

Study’s Purpose: The purpose of this study is to discover and ascertain student expectations of information literacy instruction and how the ACRL *Framework for Information Literacy* are aligned to these expectations. This study will engage selected first-year undergraduate students to share their definition of information literacy and what they expect to learn from information literacy instruction. Although the ACRL *Framework for Information Literacy* is regarded as the guiding force in developing information literacy instruction, data gathered in this study will help provide specific anecdotal information that can be used locally to tailor information literacy instruction to meet student expectations and learning preferences.

Overview of Procedures: This study will be conducted through a one-on-one interview with the principal investigator (Kathleen Brenner). Upon your consent to participate, you will be contacted via email to arrange a 30-45 minute one-on-one interview scheduled at your convenience. All interviews will take place in the [name of conference room redacted] located on the first floor of the [research institution library]. The principal investigator will review the study’s purpose and will ask you if you have any questions before the interview begins.

During the interview, you will be asked a series of questions regarding your perspectives of information literacy. The interview will be recorded using an iPad. Upon completion of the interview, a transcription of the recording will be generated using Microsoft Word protected on the principal investigator’s University of New England OneDrive (additional information is located in Participant Rights).

Your participation in this research study is completely voluntary. If you wish to participate in this research study, please sign and return the attached Consent Form document by February 15, 2019. You may stop participation in this study at any time if you choose to.

Your involvement or exemption in the study will have no influence on your FYE grades, access to library services, or status as a [research institution] student.

Participant Rights: Your identity will be protected throughout the study and thereafter. Only I, the Principal Investigator, will have access to the audio recording generated in the interview and the written transcription. The principal investigator will be the only person collecting the data to ensure the anonymity of the site and participants, as well as to provide uniform collection procedures. Follow-up verbal/signed and written reports and discussions will identify you only as a number (i.e. Participant #01). The principal investigator will code participants with a number (i.e. Participant 01, Participant 02, etc.) to protect your identity and maintain organization of the data throughout the study by using a secured Microsoft Word document with each person's name and corresponding unique Participant ID number. The data will be kept on only on the principal investigator's [name of research institution] OneDrive which is password protected and only accessible to the principal investigator. The principal investigator will use a personal laptop which is also password protected and encrypted. Identifying information will be removed from the Principal Investigator's computer and OneDrive after the study's completion and will not be accessible for future study uses. Your identity will be protected in compliance with the University of New England's research with human participants' policies and procedures.

Risks: Although all steps will be taken to protect participants' anonymity and confidentiality of responses, readers may identify the institutional site from the demographics detailed in the study. Due to the small sample size of participants, a reader may identify a participant based on demographic characteristics.

Compensation: No monetary or non-monetary compensation will be provided for your input or time.

Questions: If you have any questions or concerns regarding this study and your participation, you may contact me, the principal investigator, via kbrenner1@une.edu. You also may contact Dr. Heather Wilmot at the University of New England at hwilmot@une.edu.

Thank you for your valuable insights and willingness to participate in this research study. Your contribution not only supports my dissertation study, but also contributes to the fields of information literacy and library science

Sincerely,

Kathleen Brenner
Principal Investigator

I, _____, voluntarily agree to participate in the research study and understand that I will not be compensated for my participation.

Signature: _____ Date: _____

Researcher's Statement

The participant named above had sufficient time to consider the information, had an opportunity to ask questions, and voluntarily agreed to participate in the interview.

Researcher's signature: _____ Date: _____
Kathleen Brenner, Principal Investigator

APPENDIX C

Research Questions and Protocol

Introduction: Thank you [PARTICIPANT'S NAME] for participating in this research study. I have provided you with an additional copy of the consent form for your records. Before we begin, I'd like to remind you that your participation is completely voluntary, and you may opt out of the study at any time. Your responses will remain anonymous and no identifiable information will be transcribed. This interview will take about 30 to 45 minutes to complete. I will ask you several questions regarding information literacy, library instruction, and learning preferences. Do you have any questions before we begin?

[Allow time for questions]

Part 1: Okay, let's get started. The first several questions will be regarding information literacy.

- IQ1. When you hear the term *information literacy*, what things come to mind?
- IQ2. In your own words, how would you define the term *information literacy*?
- IQ3. Has your definition of information literacy changed since you came to [name of research institution]? Why or why not?
- IQ4. How do you value information literacy as a first-year student?
- IQ5. Think back to your experiences in high school. What experiences did you have in receiving any type of library instruction? Did you receive any type of formalized information literacy instruction? How do you think this has impacted your definition of information literacy?
- IQ6. Again, think back to your experiences in high school. How do you think your experiences affected your current value of information literacy as a first-year student?
- IQ7. Based on your experiences and your perception of information literacy, what are the most important things that should be taught in an information literacy program? Why do you think so?
- IQ8. In what ways do you feel you learn best? Can you provide an example?
- IQ9. Are there instructional methods that you think work better than others? Can you provide an example?
- IQ10. What instructional methods should be used to teach information literacy? Is there a scenario that comes to mind?

Closing: That concludes our interview. Is there anything else you would like to add about the topic? Or, are there any questions you may have?

[Allow time for questions and comments]

Thank you again for your participation in this research study.

APPENDIX D

Alignment of Interview Questions

Table A1

Alignment of Research Questions and Interview Questions

Research Question	Corresponding Interview Questions
RQ1. How do first-year undergraduate students define the term <i>information literacy</i> ?	<p>IQ1. When you hear the term <i>information literacy</i>, what things come to mind?</p> <p>IQ2. In your own words, how would you define the term <i>information literacy</i>?</p> <p>IQ3. Has your definition of information literacy changed since you came to [research institution]? Why or why not?</p> <p>IQ4. How do you value information literacy as a first-year student?</p>
RQ2. How do first-year undergraduate students' past experiences and perceptions influence their definition of <i>information literacy</i> ?	<p>IQ3. Has your definition of information literacy changed since you came to [research institution]? Why or why not?</p> <p>IQ5. Think back to your experiences in high school. What experiences did you have in receiving any type of library instruction? Did you receive any type of formalized information literacy instruction? How do you think this has impacted your definition of information literacy?</p> <p>IQ6. Again, think back to your experiences in high school. How do you think your experiences affected your current value of information literacy as a first-year student?</p> <p>IQ7. Based on your experiences and your perception of information literacy, what are the most important things that should be taught in an information literacy program? Why do you think so?</p>
RQ3. What concepts do first-year undergraduate students expect to obtain from information literacy instruction and how do they expect to achieve these objectives?	<p>IQ4. How do you value information literacy as a first-year student?</p> <p>IQ7. Based on your experiences and your perception of information literacy, what are the most important things that should be taught in an information literacy program? Why do you think so?</p> <p>IQ8. In what ways do you feel you learn best? Can you provide an example?</p> <p>IQ9. Are there instructional methods that you think work better than others? Can you provide an example?</p> <p>IQ10. What instructional methods should be used to teach information literacy? Is there a scenario that comes to mind?</p>

APPENDIX E

Participants' Definition of Information Literacy Aligned to the ACRL *Framework*

Table A2

Participants' Definition and Expectations of Information Literacy Aligned to the ACRL Framework

Frame	Interpretation of Frame	Components of Participants' Definition of Information Literacy	Components of Participants' Expectations of Information Literacy Instruction
1. Authority is constructed and contextual	Information is based on the author's credibility within the context of the intended use of the information	NA	Finding credible resources within a specific context
2. Information creation as a process	Creation of information is a process to yield the intended message (to inform, persuade, etc.)	Infer and interpret information within a given context	Finding credible resources within a specific context
3. Information has value	Information value is relevant to the context it is used	Infer and interpret information within a given context	Finding credible resources within a specific context
4. Research as inquiry	Continuously asking new questions from different perspectives yields new discoveries	NA	Encouraging the use of opposing information to develop one's critical thinking skills
5. Scholarship as conversation	Sharing information with other likeminded researchers leading to new research, perspectives, or ideas	NA	NA
6. Searching as strategic exploration	Research is an iterative process that is often nonlinear	Finding scholarly resources	Utilize different methods and channels of obtaining information from nontraditional sources