

2020

Two-Session Information Literacy Program Effectiveness for Rural First-Year Undergraduates

Del Duke
Walden University

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Walden University

College of Education

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Delton Duke

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2020

Abstract

Two-Session Information Literacy Program Effectiveness for Rural First-Year

Undergraduates

by

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MS, Southern Arkansas University, 2006

BS, Southern Arkansas University, 2000

Project Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

Walden University

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Abstract

A small rural university in the southern United States was unsure if its first-year student information literacy (IL) program was effectively preparing its rural students for the university's IL learning goals. The purpose of this quantitative study was to determine if the IL program is effective for rural students. Carol Kuhlthau's Information Search Process (ISP) theory was used, which identifies key stages that students experience when solving information problems. The overarching research question for the study examined the effectiveness of the university's IL program on incoming rural first-year students' IL knowledge and skills. The study used archive pre/post assessment data of 78 rural IL program students from the fall of 2019 who participated in two fifty-minute IL instruction sessions. Descriptive and inferential statistics were calculated for IL pre and posttests and provided indicators that participants developed the necessary IL knowledge and skills for the university's learning goals. Paired-samples *t* tests provided indicators that students delivered a competent performance ($M = 2.0$ or higher) following IL instruction ($M = 3.326$, $SD = .6899$) as opposed to pre-IL instruction performance ($M = .687$, $SD = .9769$), a statistically significant mean increase of 2.639, 95% CI [2.369 - 2.908], $t(77) = 19.467$, $p < .001$, $d = 2.20$. The study's results indicated the IL program's effectiveness, helped address a gap in professional literature involving rural students' IL knowledge and skills, and provided data to develop a policy paper targeting improvements in IL instruction, micro-credential tracking, stakeholder communications, and support for students throughout their degree programs to improve student learning. The study promotes positive social change that ensures rural students are equipped with IL knowledge and skills necessary for academic, career, and lifelong success.

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Dedication

I dedicate this to the many, many teachers over my life. My teachers taught me both formally and informally in the classroom and during day-to-day interactions. I cannot possibly name all of my teachers here, but I wish to thank you for your influences in my life.

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Section 1: The Problem

The Local Problem

The local problem prompting this study was a concern that the first-year student information literacy (IL) program at a small rural university (SRU) in the southern United States did not adequately prepare its rural students. SRU's administration implemented a new rural studies curriculum initiative, which led to developmental work for new undergraduate rural studies courses, certificates, and degree tracks. During a review of course offerings, the rural studies curriculum committee developed a concern about the IL program not adequately preparing rural students with the necessary IL knowledge and skills required in its university learning goals. According to SRU's 2019 demographic data, 58% of first-year students come from rural backgrounds.

SRU's University Learning Goal 4: Information Literacy states that students should have abilities to determine the nature of required information, to access it effectively and efficiently, and to evaluate it critically. According to the SRU learning goal, IL involves the responsible, legal, and ethical use of information. IL knowledge and skills are necessary for academic, career, and lifelong success (Bapte, 2019). Upon reviewing the university's assessment processes, it was discovered that university's institutional research (IR) offices did not assess incoming first-year students, according to the IR director. The IR director reported a concern that rural first-year students may not have adequate IL knowledge and skills to be academically successful. As a result, the IL program librarians began efforts to study its effectiveness in terms of preparing students

for meeting the university's IL learning goals, according to an SRU online and instructional librarian.

According to an SRU librarian, the IL program librarians have struggled historically with conducting formal assessments due to using a two-session IL instruction model that only allows for minimum time teaching, working with, and assessing students. According to an SRU librarian, faculty have reported that students lack the necessary IL knowledge and skills for upper-level coursework. The IL program librarians began piloting assessments in the fall of 2019 to collect student IL knowledge and skills data. They were attempting to address the instruction and assessment problems. However, they chose to focus on assessment in general rather than specifically address specific student demographics like age, gender, race, or urban/rural backgrounds during the initial implementation. Upon reviewing professional literature, I discovered that there was a gap in the literature about the IL skills of rural first-year students (Sterling, McKay, & Ericson, 2017).

Librarians have trouble measuring effectiveness, particularly with library instruction assessments (Barefoot, 2017; Savage, Piotrowski, & Massengale, 2017; Wegener, 2018). Faculty claims of students lacking IL knowledge and skills align with current professional literature and claims in terms of how IL instruction is particularly important for first-year students who have insufficient IL knowledge and skills required to succeed in the college course work (Bapte, 2019; Hinchliffe, Rand, & Collier, 2018; Wegener, 2018). Barefoot (2017) stated that there are limitations to two-session IL

designs due to time constraints for delivering instruction and subsequent student learning activities.

Rural students face IL challenges. Sterling et al. (2017) described the lack of current literature about the IL knowledge and skills of rural students who come from different backgrounds than their urban counterparts. The United States Census Bureau (2017) described 19.3% of the population living in rural communities had populations less than 65,000. SRU's rural setting and student population provided an opportunity to study the IL knowledge and skills of this unique student demographic. According to SRU's accreditation portfolio documents, the university has established IL learning goals that serve as a guide for delivering IL program instruction. However, the IL program does not measure its effectiveness in terms of preparing students with IL skills. The university divides its IL goal into five knowledge and skill assessment areas:

1. Determine the extent of information needed,
2. Access the needed information
3. Evaluate information and its sources critically
4. Use information effectively to accomplish a specific purpose
5. Access and use information ethically and legally.

SRU's IL learning goal aligns with the long-standing Association for College and Research Libraries' (ACRL; 2000) IL standards. The ACRL (2000) has historically advocated for IL as being necessary for education and lifelong learning. The ACRL recognizes assessment as a common problem in many institutions, including IL programs (Savage et al., 2017).

Higher education administration encounters many accountability challenges with increased demands for evidence of student learning (Savage et al., 2017; Wegener, 2018). The ACRL identified the need for librarians to provide performance indicators for their IL programs (Savage et al., 2017) and expects libraries to provide data regarding IL contributions to student success (ACRL, 2018). However, many instructional librarians struggle to administer both instruction and assessments because of time constraints, such as being limited to one or two-session first-year student IL program models (Barefoot, 2017; Brown, 2017).

An SRU instructional librarian reported that the first-year IL program previously used a two-session approach with only formative class activities that were not comprehensive and insufficient for measuring program effectiveness. A two-session IL approach involves providing library instruction during two separate class periods, and students have time following each session to practice and complete formative assessments (Barefoot, 2017). IL skills are critical to students' academic success in college course work (Reading, 2016), and solving problems in employment and other real-world experiences (Roberts, 2017).

This investigation of SRU's IL program for first-year students aided in the development of an improved IL instruction plan. I provided a plan to help determine rural students' level of IL knowledge and skills needed for future academic and professional work. The developed instruction plan included an assessment plan aligned with SRU's assessment plan and can serve as an example for other librarians in the broader academic library community. The investigation aided in addressing the literature gap regarding

rural first-year student IL knowledge and skills and addresses the local concern involving IL program instruction effectiveness at preparing rural students with necessary IL knowledge and skills.

Rationale

According to SRU's (2019) demographic data, most of the university's first-year students identify as coming from rural backgrounds, which prompted the university's administration to expand its educational focus to include rural emphases. SRU's administration has begun work developing courses, certificates, and degree programs with rural study emphases. The new rural emphases led the university's administration to question its effectiveness in preparing its rural students, according to the SRU rural studies committee.

A SRU librarian reported that the new rural initiative triggered a call for accountability, and the IL program librarians to begin looking at their effectiveness in terms of preparing rural students. The IL program librarians reached out to the university's institutional research for any current data on the university's first-year student IL knowledge and skills. They found that the university currently did not collect first-year student IL data. Further, the university's IR director reported a concern that the IL program for first-year students may not adequately prepare rural students. According to an SRU librarian, the university's IL program for first-year librarian instructors have only recently begun studying its effectiveness and have not explicitly focused on rural students.

In this quantitative study, I used secondary data to examine rural first-year students' IL knowledge and skills before and after the IL program's two-session instruction. My goal was to determine if the program's instruction delivery method effectively provided rural students with the university's required IL knowledge and skills. The IL program had recently begun to measure its effectiveness and did not have a system for reporting effectiveness specifically for rural students. The university's administration has asked that the IL program be accountable in terms of preparing its rural first-year students with the required IL knowledge and skills. IL program accountability means being able to demonstrate the IL instruction's impact on student learning using measurable outcomes (Erlinger, 2018). I used a quantitative approach to investigate the effectiveness of IL instruction on rural student IL learning.

The purpose of this quantitative project study was to address a gap in practice by examining the effectiveness of a university's IL program instruction at preparing incoming rural students to meet the school's IL learning goals necessary for academic, career, and lifelong learning. The project was a policy paper aimed at addressing the gaps in practice (see Appendix A). The study was significant because it helped address a gap in the literature about IL knowledge and skills of rural students.

Definition of Terms

There are many terms involving IL. These terms are often unknown or misunderstood; however, they are critical in terms of preparing students as proficient professionals and global citizens (ACRL, 2000). I have provided a listing of many of

these terms used in the description of this study. Appendix B includes additional terms relating to IL.

Accessing the Needed Information: This is the second part of the university's information learning goal in which students locate information resources. It equates to Kuhlthau's (1991) exploration stage.

Collection: or the collection stage, is when students feel a sense of direction and confidence as they gather information resources for possible use (Kuhlthau, 1991). Students during the collection stage are locating resources relevant to the needed information topic. While students may not use all the information from the resources, they choose information resources to review with closer attention to address specific gaps in knowledge.

Determining the Extent of Information Needed: When students begin recognizing a gap in knowledge or skill, the need for information, and identifying a topic area for the gap in knowledge. This term is SRU's first IL learning goal and ACRL's (2000) equivalent to Kuhlthau's (1991) ISP stages *initiation* and *selection*.

Evaluate Information and Its Sources Critically: The process of reviewing information for relevance and is SRU's third IL learning goal equivalent to Kuhlthau's (1991) *formulation* stage.

Exploration: or the exploration stage, is when students experience feelings of frustration, confusion, and doubt as they actively investigate information resources to determine gaps in their knowledge (Kuhlthau, 1991). Students during this stage recognize a gap in their knowledge and are actively reviewing information resources to determine

what it is they do not know. Exploration equates to SRU's second IL learning goal, *accessing the needed information*.

Formulation: or the formulation stage, is when students begin experiencing clarity and increases in confidence as they determine the focus of their information needed (Kuhlthau, 1991). Students determine the general topic area when they reach the formulation phase, while they do not know the exact components of knowledge they are seeking. Formulation equates to SRU's third IL learning goal, *evaluate information and its sources critically*.

Initiation: Carol Kuhlthau's first information-seeking stage, initiation, or the initiation phase, begins with knowing information is needed, which includes feelings of uncertainty involving a lack of knowledge (Kuhlthau, 1991). Students during this stage first recognize that they do not know something, and those who do not may be oblivious to the information problem. Initiation is Kuhlthau's equivalent of the SRU's first IL learning goal, *determining the extent of information needed*.

Presentation: or the presentation stage, students feel satisfaction and are focused as they solve the information problem and deliver a resolution (Kuhlthau, 1991). Students completing formal research assignments deliver presentations or papers presenting the information problems and resolutions. SRU's fifth IL learning goal described presentation as *using information ethically and legally*.

Selection: or the selection stage, is when people recognize a knowledge gap, and they begin the selection of possible resources to meet their information needs, which may include conferring with others or consideration of published resources (Kuhlthau, 1991).

Students during this stage are aware of the information problem but are unsure of their topics. Students aim to identify the topic of their knowledge gap, recognizing an information problem's existence by lacking terminology for the gap in understanding during the selection stage (Kuhlthau, 1991). SRU first IL learning goal described selection as *determining the extent of information needed*.

Using Information Ethically and Legally: is accessing and disseminating information according to professional and legal standards according to SRU's fifth IL learning goal. The terminology equates to Kuhlthau's (1991) presentation stage in which students present information findings to others.

Significance of the Study

This study aimed to address the local problem, which was a gap in practice caused by the university's IL program for first-year students not measuring its effectiveness in terms of preparing rural students with necessary IL knowledge and skills. According to SRU's (2020) demographic data, 69.23% of SRU's fall 2019 first-year students identified as coming from rural backgrounds. The SRU administration began a new initiative focused on developing new courses, certificates, and degrees with an emphasis on rural studies and was unsure whether its IL program for first-year students was effective in terms of preparing its rural first-year students.

According to SRU instructional librarians, the IL program has only recently begun incorporating student learning assessment to determine the program's effectiveness and currently had no measures of effectiveness in terms of preparing rural students. The university's IR director reported a concern involving the IL program for

first-year students in terms of meeting the needs of rural students. SRU's IL learning goals require students to demonstrate their abilities to determine the extent of information needed, access needed information, evaluate information and its sources critically, use information effectively to accomplish a specific purpose, and access and use information ethically and legally.

The project was unique because it aimed to address the local concern of rural student IL knowledge and skills and a gap in the literature of rural student IL knowledge and skills. IL skills are important because students and global citizens navigate a world filled with an abundance of misinformation (Fielding, 2019). Sterling et al. (2017) indicated that little distinction had been made between urban and rural college students, but both groups differ in their IL backgrounds. According to the United States Census Bureau (2017), rural is classified as a city or town with less than 65,000 people and is home to 19.3% of the population.

The purpose of this quantitative project study was to address a gap in practice by investigating the effectiveness of a university's IL program instruction in terms of equipping incoming rural students with IL knowledge and skills to meet the school's IL learning goals necessary for academic, career, and lifelong learning. The study addressed a literature gap about rural first-year student IL knowledge and skills (Sterling et al., 2017). The study addressed a local concern that the IL program for first-year students meet the school's rural students' needs. Kuhlthau's (1991) ISP theory aligns with the university's IL learning goals and was used because its stages identify students' experience when solving information problems. The independent variable is the

measurement opportunity, or time, of rural student IL knowledge and skills before and after IL program instruction. The treatment is the IL program instruction, which delivers two lessons on IL knowledge and skills based on the university's IL learning goals. The dependent variable is the rural students' scores on the assessments measuring the students' IL knowledge and skills before and after IL program instruction.

The study findings helped address a literature gap involving rural first-year student IL knowledge and skills and local concern that the university's IL program for first-year students adequately equips its rural students with necessary IL knowledge and skills. In this study, I used secondary data collected from IL program student participants. The IL program's archived student data were checked against registration records to identify students from rural backgrounds. I built upon a similar study by Usina (2015) who aimed to address a community college's IL assessment problem using ACRL IL standards and its IL goals. However, the current study's university setting is in a different geographical region of the United States than the Usina (2015) school. It focused on addressing a rural first-year student IL assessment problem for 4-year programs versus certificate and 2-year programs.

Research Questions and Hypotheses

The study's research questions reflect the SRU IL learning goals that align with Kuhlthau's (1991) ISP stages. The study has one overarching research question (RQ) to determine rural students' performance at meeting the SRU IL learning goals. The overarching question provides a broader view of how the IL program performs at equipping rural students with IL knowledge and skills for their studies and as global

citizens. However, the study includes subquestions (SQ) to provide measurements of rural student knowledge and skills for each component of the SRU IL learning goals and Kuhlthau's (1991) stages.

RQ 1: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills?

This overriding question is summative of SRU's IL learning goals and Kuhlthau's (1991) ISP phases. However, to understand students' knowledge and skills for each component of SRU's learning goals and Kuhlthau's ISP Stages, the RQ was broken into five SQs reflecting each of the components and phases. In each of the following hypotheses, delta t , Δt , represents the mean of the differences between posttest and pretest scores [$\Delta t = \sum(t_{\text{posttests}} - t_{\text{pretest}}) / n$].

SQ 1: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills for determining the extent of information needed?

H_0 1: There is no significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for determining the extent of information needed. $\Delta t = 0$.

H_a 1: There is a significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for determining the extent of information needed. $\Delta t \neq 0$.

SQ 1 is the direct language of the first component of SRU's IL learning goals and Kuhlthau's first and second Stages. SQ 1 indicates students' knowledge and skills in what SRU and Kuhlthau describe as encountering an information problem and identifying a

gap in knowledge for a specific topic. SQ 1 aligns with Kuhlthau's Stages 1, initiation, and 2, selection, in which students recognize an information problem and a general topic for investigation. During Stages 1 and 2, students have feelings of uncertainty as they consider what background and what is unknown about the information problem and what information to seek.

SQ 2: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills for accessing the needed information?

H₀2: There is no significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for accessing the needed information. $\Delta t = 0$.

H_a2: There is a significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for accessing the needed information. $\Delta t \neq 0$.

SQ 2 aligns with SRU's second IL component and Kuhlthau's Stage 3, exploration, in which students investigate possible information resources. During Stage 3, students feel frustration and confusion as they attempt to locate resources relating to the information problem.

SQ 3: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills for evaluating information and its sources critically?

H₀₃: There is no significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for evaluating information and its sources critically. $\Delta t = 0$.

H_{a3}: There is a significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for evaluating information and its sources critically. $\Delta t \neq 0$.

SQ 3 aligns with SRU's third IL component and Kuhlthau's Stage 4, formulation, in which students gain clarity of the topic of the information problem and begin to narrow their information search. Students start gaining confidence.

SQ 4: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills for using information effectively to accomplish a specific purpose?

H₀₄: There is no significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for using information effectively to accomplish a specific purpose. $\Delta t = 0$.

H_{a4}: There is a significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for using information effectively to accomplish a specific purpose. $\Delta t \neq 0$.

SQ 4 aligns with SRU's fourth IL component and Kuhlthau's Stage 5, in which students begin to gather resources for possible use in the resolution of the information problem. Students continue to gain increases in confidence, interests, and focus as they seek and retrieve relevant information.

SQ 5: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills for accessing and using information ethically and legally?

H₀5: There is no significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for accessing and using information ethically and legally. $\Delta t = 0$.

H_a5: There is a significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for accessing and using information ethically and legally. $\Delta t \neq 0$.

SQ 5 aligns with SRU's fifth IL component and aligns with Kuhlthau's sixth Stage, Presentation. For students, this SQ reflects students presenting information in the form of a research assignment, such as a formal paper or presentation that must be formatted to a professional set of standards like the American Psychological Association or Modern Language Association's writing and presentation formats. The presenting of information for students involves formally citing other professionals in a field of study, acknowledging the scholarly conversation about the topic being presented, and consulting professional information resources in the development of the presentation (Ford, 2019).

Review of the Literature

Much research exists about first-year college students' IL knowledge and skills. However, there is a lack of research focusing on IL knowledge and skills of first-year college students from rural communities. IL knowledge and skills are critical in terms of student development to become adept professionals and global citizens (ACRL, 2000).

Theoretical Foundation

Carol Kuhlthau's Information Search Process theory was the theoretical foundation for this study. Black and Allen (2017) acknowledged the significance of Carol Kuhlthau's work in information literacy instruction, particularly teaching the ACRL (2000) IL standards. Kuhlthau (1988) first recognized the challenges that high school and college students face when resolving information problems. Based on these findings, Kuhlthau (1991) followed-up her work to continue studying students' responses to information challenges and developed her theory, the Information Search Process (ISP), which identifies six stages that students experience when resolving information problems. ISP acknowledges that information seekers experience common feelings, thoughts, and action reactions during their processes to solve information problems (Kuhlthau, 1991). Each set of responses corresponds to one of ISP's six stages, which include appropriate task responses (Kuhlthau, 1991). ISP's six stages include details regarding what students are expected to experience when resolving information problems as global citizens.

ISP Theory Description

Kuhlthau (1991) named the first stage, initiation, in which students first recognize an information problem and a lack of knowledge. In Stage 2, selection, students identify topics of possible lack in their knowledge or understanding. In Stage 3, exploration, students begin reviewing available resources to explore the topics selected. In Stage 4, students begin identifying resources that meet their gaps in knowledge or understanding. In Stage 5, collection, students begin collecting relevant resources to use to meet their gap in knowledge or understanding. In Stage 6, presentation, students use the resources

and present them as solutions to their gap in information knowledge or understanding problems.

The study frames the rural first-year student IL knowledge and skills as experiencing Kuhlthau's (1991) ISP stages when resolving information problems. Table 1 provides an overview of the alignment of each of the ISP stages, student reactions, and student responses. While students may proceed through each stage chronologically, some students can return to previous stages before completing all stages. In some instances, students can become stuck at one stage and become unable to resolve the information problem. Educators who recognize what stage students are experiencing can better understand what students are experiencing and better target their student support efforts.

Table 1

Kuhlthau's (1991) ISP's Stages, Reactions, and Responses

ISP Stages	Reactions	Responses
Stage 1 Initiation	Feelings of uncertainty. Thoughts are general or vague. Actions are seeking background information.	Recognize an information problem.
Stage 2 Selection	Feelings of uncertainty. Thoughts are on possible criteria. Actions are conferring with others.	Identify the general topic for investigation.
Stage 3 Exploration	Feelings of confusion, frustration, and doubt. Actions of seeking relevant information.	Investigation of possible information sources.
Stage 4 Formulation	Feelings of clarity and increases in confidence. Thoughts are narrower and clearer.	Formulate a focus for the information needed.

(table continues)

Stage 5 Collection	Feelings of direction and confidence. Thoughts are on increased interest. Actions include seeking relevant or focused information.	Gather information resources for possible use.
Stage 6 Presentation	Feelings of relief and satisfaction or disappointment. Thoughts are clearer or focused.	Complete the information problem.

Justification of Selection of ISP

I chose Kuhlthau's (1991) ISP as a theoretical model for identifying problems that rural first-year students experience during the completion of IL problem-solving. The ISP stages align with the study's RQs and hypotheses, aligning with the university's IL goals at preparing students to become global citizens. Table 2 has the alignment of the study's RQs with the SRU Learning Goals and ISP Stages.

Table 2

Alignment of Research Subquestions, University Learning Goals, and ISP Stage

Research SQs	University Learning Goals	ISP Stages
1	1	1 & 2
2	2	3
3	3	4
4	4	5
5	5	6

I used the ISP framework during hypotheses testing to determine how students might struggle to resolve information problems. The research SQs and ISP alignment is essential for describing rural students' IL knowledge and skills. For example, should the study's findings indicate low student performance for SQ 1, it is understood that students have trouble recognizing and identifying the information problem, university IL learning area 1. Further, low student performance on SQ 1 indicates the students are experiencing ISP's Stages 1 and 2 in which they feel uncertain and have vague thoughts about the information presented.

Review of Broader Problem

There are issues associated with rural first-year students transitioning from high school to college, specifically a lack of adequate IL knowledge and skills. I conducted a review of the literature using research databases and digital libraries. In the review, I focused on professional literature, institutional and accreditation standards involving student IL knowledge and skills, the teaching, learning, and assessment of IL knowledge and skills, and the differences in terms of first-year college students' backgrounds. I searched using the keywords: *information literacy, institutional standards, accreditation standards, students, undergraduates, first-year students, teaching, learning, assessment, information literacy programs, instructional programs, rural, instructional practice, information literacy delivery, information literacy support, library, library instruction, library assessment, instructional effectiveness, information literacy assessment, VALUE scales, information literacy skills, retention, and student success.*

Searches were conducted using the Walden Library databases, Academic Search Complete, Education Source, ERIC, Computers & Applied Sciences Complete, Library, Information Science & Technology Abstracts, EBSCO OpenDissertations, APA PsycArticles, APA PsycBooks, SocINDEX with Full Text, SAGE Journals, ScienceDirect, Taylor and Francis Online, ScholarWorks, ProQuest Dissertations & Theses Global, and Dissertations & Theses @ Walden University. Finally, I performed searches in Google Scholar for publications not included in the former collections. I arranged the topics in the undergraduate context, including preparing first-year students with IL knowledge and skills for academic success. I arranged the current research on the study's problem into two major themes: the students' IL knowledge and skills and academic expectations and the programs that provide IL instruction and their processes.

The Importance of IL for First-year Students' College and Career Success

IL is necessary for academic and career success and global citizenship, yet many high schools do not prepare students with IL knowledge and skills. D'Orio (2019a) said that only 25% of high school libraries have plans for preparing their students for college-level research, which leaves many students unequipped in terms of college-level IL knowledge and skills. Goldstein (2019) argued that the IL assignments given to high school students do not have college-level rigor or place information problems into the college context.

Many incoming first-year college students do not have the necessary IL knowledge and skills to be successful in their academic studies or careers. D'Orio (2019b) recognized that first-year college students struggled due to their lack of research

skills and argued that colleges need to have an information literacy action plan. Further, college students are over-confident of their IL skills and rely too much on easy-access Google searches to unknowingly retrieve and use resources that have not been evaluated for quality and are inaccurate (D’Orio, 2019b). The students’ lack of IL knowledge and skill and over-confidence instigates the need for IL instructional programs that teach the necessary IL knowledge and skills.

University IL programs need to prepare incoming first-year students for their academic studies. Peter, Leichner, Mayer, and Krampen (2017) expressed the need for IL instruction to be both developmental in addressing deficiencies and promoting greater achievement in learners functioning at more significant IL knowledge and skill levels. Goldstein (2019) recognized that college students have trouble contextualizing IL knowledge and skills fully into college-level research processes. IL programs need to consider how to deliver content best to engage their students while preparing them for the future.

University IL programs need to consider students’ background knowledge and skills when delivering IL lessons. Students use their prior knowledge of Internet experiences to judge the quality of information. Still, when given a research assignment requiring authoritative resources, they consistently fail to identify quality resources due to overestimating their IL knowledge and abilities (Knight et al., 2017). Folk (2018) emphasized the importance of recognizing students’ prior experiences when delivering IL instruction, particularly the lack of experiences coming from disadvantaged backgrounds. Students often do not recognize the importance of gaining IL knowledge and skills

beyond an end product, such as an assigned research paper, and fail to identify the importance of IL knowledge and skills in resolving future information problems (Folk, 2018).

University IL programs need to prepare students for their careers. Johnson (2017) said that IL is a set of skills required by employers for careers and important for lifelong learning. Graduates using their IL skills to stay fluent in the current scholarly conversation helps them as professionals to continue to develop and refine their professional knowledge and skills (Ford, 2019). People use these same skills to further professional development and during their everyday lives to identify and resolve information problems, such as identifying fake news and locating and using verifiable facts (Fielding, 2019). IL instruction can equip students to handle a variety of information problems over their lifetimes.

Rural College Students

It is uncertain how rural college students differ from their urban counterparts in terms of IL knowledge and skills due to a gap in the professional literature. Sterling et al. (2017) recognized that existing IL student research studies do not distinguish between students from urban and rural settings. Sterling et al. reported that rural students lack awareness of IL concepts, resources, instruction, and support. The gap in knowledge of rural students is critical, given that the United States Census Bureau (2017) identified that 19.3% of the U.S. population lives in rural settings. The study's university is located and surrounded by rural population counties (United States Census Bureau, 2019).

There is some knowledge of differences in rural populations when compared to their urban counterparts. Yu, Lin, and Liao (2017) said that people in rural areas suffer from a digital divide in which they lack access to information and communication technologies available in developed urban areas. Buzzetto-Hollywood, Wang, Elobeid, and Elobaid (2018) described the importance of higher education institutions addressing the gap due to the digital divide to meet the needs of underserved students to prepare them to use technology and the associated information retrieved and created. Rural students' backgrounds cause them to have different views, knowledge, and academic study skills than their urban counterparts.

Rural college students have distinct challenges that influence their educational experiences. Hlinka (2017) found that rural community college students are influenced by community and family members of values or lack of education. For example, parents often do not know what it takes for college students to be successful in their coursework, which results in not providing instruction and other support to their children attempting to attain higher education (Hlinka, 2017). Hlinka described rural community college students as battling with meeting their family needs versus persisting in their educational pursuits. Rural college students also lack maturity and find it challenging to prioritize personal and family problems with what is required for college success (Hlinka, 2017). Hlinka found that rural community college students have trouble cognitively performing college-level assignments. Rural college students fail to transition from a high school mentality of memorization to higher cognitive functions necessary for college in which they must integrate, reflect, and apply concepts (Hlinka, 2017). Historically, IL

challenges that students faced in the transition from high to college were studied by Kuhlthau (1988). However, these IL problems still exist and have been compounded today with the World Wide Web's onset and its abundant mixture of high and low-quality resources (Fielding, 2019).

Two recent studies of rural students from remote regions of the United States and India provide some additional insight into this unique college student group. Nelson (2016) studied a sample of rural students in Maine and described that approximately half of the current jobs require a secondary education, which creates challenges, particularly for rural youth. Rural populations have a large and growing gap in college and postgraduate education achievement (United States Census Bureau, 2019). People in rural areas are likely to have lower household incomes, have fewer adults who have been to college, are less likely to understand the required academic rigor, and have schools with fewer academic and extracurricular offerings (Nelson, 2016). According to the U.S. Census Bureau in 2017, Arkansas's rural poverty rate was 20.0% compared to 14.2% for its urban counterparts (United States Census Bureau, 2019). Nelson (2016) explained that while rural students tend to have closer familial networks, these connections do not necessarily assist in terms of academic achievement. Rural students are likely to have parents with less educational experience and expectations, causing the students to be culturally distant from their urban counterparts (Nelson, 2016). Rural freshmen students are likely to be unprepared, incognizant, and unsupported for academic or professional rigor needed for their career goals.

Incoming rural college students face information problems without the necessary IL knowledge and skills. According to an international study of undergraduate IL knowledge and skills in practice, Yasmin and Stephen (2019) studied rural students in India. They described students as lacking core IL knowledge and skills. Only 27.7% of students enrolled in the Indian study had an adequate understanding of Boolean operators, 52.7% used meta-search engines sufficiently, and 35.8% could decipher the parts of a bibliographic reference (Yasmin & Stephen, 2019). There were 50% of the rural Indian students who preferred help from library staff when needing to retrieve library material (Yasmin & Stephen, 2019). These same experiences may be present in students from other rural regions of the world, including rural Arkansas.

First-Year College Students

First-year college students come from diverse backgrounds and face many academic challenges. Historically, Kuhlthau (1988) identified IL challenges that students face as they transition from their high school experiences to college-level work. Kuhlthau (1991) built upon her 1988 work, which led to developing her Information Search Process theory that identified six stages that students experience when resolving information problems. Lenker (2017) emphasized similar IL challenges first-year college students face today, particularly in evaluating information. Lenker (2017) recognized that students lack the IL skills that are expected for success in college and life. Lowe et al. (2018) recognized that first-year students struggle to conduct searches and have problems using search tools and terminology, such as Boolean operators, needed to locate relevant information successfully. Carozzi (2018) described how many first-year students could

find scholarly and peer-reviewed resources but are unsure how to synthesize the information and incorporate them into their college assignments. These student IL challenges are essential to consider when planning and delivering IL programs since information literacy is a valued skill set that 68% of employers agree that every college student should have to be successful in the workplace (Collier, 2019).

IL Instructional Programs

The current literature on IL instruction describes delivery methods to college students in various forms and spanning throughout their educational experiences (Tingelstad & McCullough, 2019). Universities focus on IL instruction of first-year students to prepare them for their academic and professional work (Bapte, 2019). Johnson (2017) described how IL programs have long and productive histories with pairing with first-year experience courses since both attempt to prepare incoming students with knowledge and skills necessary for college success. IL programs attempt to address gaps in their students' IL knowledge and skills necessary for academic and career success.

Unfortunately, IL instructional programs often struggle to address the needs of students. Peter et al. (2017) said that IL instruction has two significant challenges, time limitations and addressing a mixture of students with strong and weak IL knowledge and skill levels. Gammons and Inge (2017) described that most students have poor performances at IL tasks, which has led to revisions in many IL programs to better meet students' needs. Hinchliffe et al. (2018) said that first-year students have misconceptions about IL knowledge and skills and argue for IL programs to target beginning college students. According to an SRU instructional librarian, the university's IL instructional

librarians have found similar student misunderstanding of the importance of IL knowledge and skills, particularly amongst first-year students. Brown (2017) described challenges to getting librarians, instructors, and administrators to standardize IL curriculum. However, IL program revisions are often based on ACRL guidelines to ensure that students are equipped with basic IL knowledge and skills (Gammons & Inge, 2017). An SRU instructional librarian reported that the university had a troubled history with standardizing IL curriculum. However, the university aligned its IL standards to ACRL IL standards during 2012, which led to the current IL standards in 2013. The RQs for this project align with the university and ACRL IL standards.

IL programs face challenges in making their instruction meaningful and motivational to ensure that students fully apply knowledge and skills in their academic studies. Despite IL program planning, Wegener (2018) recognized that first-year IL instructional programs fail to prepare students and advocate for more IL instruction since students commonly use only a few types of information sources in their academic studies rather than a breadth of resources that provide an enriched perspectives of research topics. One of the challenges for effective IL instruction with students is making the content meaningful to students, including specific course assignments (Zhao, 2015). Hurvitz, Benvau, and Parry (2015) and Booth, Lowe, Tagge, and Stone (2015) said that it is essential that IL instruction is linked with student success in coursework. Roberts (2017) identified the need for IL instruction to include real-world applications using problem-based learning. Harris (2017) argued the need for IL instruction to connect to both students' academic and professional goals. The university's IL program for this

study has attempted to link its instruction with student and learning and professional goals but is unable to describe its effectiveness due to the lack of a formal assessment.

IL programs have challenges in providing instruction in various learning settings that match students' experiences and time and space needs consistently. IL program librarians have attempted to address a variety of students' diversities and needs. The study's university attempts to meet students learning needs by offering various instructional formats, including through its IL instructional offerings. Greer, Hess, and Kraemer (2016) described university IL programs as machines that are merely led by librarians and consist of various instructional delivery models. Current IL instruction includes the use of flipped classrooms becoming popular in educational settings using online and hybrid formats to allow more application (Greer et al. 2016). Some IL programs use online self-training programs to deliver instruction proven to be effective and preferred by students (Ismail, Mamat, & Jamaludin, 2018). However, part of the challenge for first-year students to recognize the importance of IL instruction is their backgrounds, with factors such as low SES statuses and lack of access to resources contributing to students' unawareness of IL deficiencies (Reading, 2016). For example, in Arkansas, the earnings per rural job in 2017 were \$38,948 compared to \$49,883 for urban counterparts (United States Census Bureau, 2019). Only 15.5% of the rural Arkansas population completed college between 2013 and 2017 compared to 26.2% of rural counterparts (United States Census Bureau, 2019). Sterling et al. (2017) recognized that existing IL research is limited on students from diverse backgrounds, particularly rural backgrounds, where students often lack in their use of IL concepts, access to resources,

instruction, and support. Larsen, Wallace, and Pankl (2018) argued the need to map teaching guidelines of IL programs with the university community's learning goals to best meet all students' needs by providing consistent, essential elements in IL instruction.

One and Two-Session IL Instructional Program Models

University IL programs serve many purposes in addressing students' lack of IL knowledge and skills, and these programs vary in their approaches. Still, university administrators often choose cost-effective approaches that are not the most academically effective (Bowles-Terry & Donovan, 2016). Gil (2017) described how one-shot IL instruction is training delivered in approximately 50 to 75 minutes and tends to introduce specific resources, research tasks, and provide tours of library resources. Egan, Witt, and Chartier (2017) and Peter et al. (2017) described how IL instruction of undergraduates often begins with foundational one-shot first-year experience workshops in which students meet for one session. One-shot IL formats have significant shortcomings due to limited class time to deliver content (Egan et al., 2017; Peter et al., 2017). Gil (2017) recognized that one shot IL instruction has been scrutinized as unsuccessful due to its time limitations. However, these sessions can help students gain some IL knowledge and skills, mainly when delivered in conjunction with specific course assignments and supported by fellow faculty members. One-shot IL instruction provides few opportunities for assessing student learning, particularly pre- and post-assessments, which causes a lack of accountability in the instructional approach (Turnbow & Zeidman-Karpinski, 2016).

IL instruction is also typical in two-session models in which students meet for two sessions. Still, while this approach may improve the one-shot model, two-session models have limited time for delivering content (Barefoot, 2017). Both one and two-shot models have received scrutiny for their effectiveness (Barefoot, 2017). While Cohen, Poggiali, Lehner-Quam, Wright, and West (2016) reported the efficacy of one-shot IL instruction in upper-level courses, Bowles-Terry and Donovan (2016) recognized that one-shot IL approaches often lack the respect they rightly deserve.

IL Program Effectiveness

IL programs face many challenges in proving effectiveness. Savage et al. (2017) recognized that academic libraries are under scrutiny by the ACRL, which expects libraries to base their work on ACRL guidelines and provide effectiveness measures. Usina (2015) recognized that some colleges lack assessment, which could be useful in understanding students' academic success. Stark, Kintz, Pestorious, and Teriba (2018) described how formal program evaluation could guide IL teaching practices and improve student learning.

IL programs vary in how they have faced challenges in developing and using quality assessments. Erlinger (2018) found that many different types of approaches are used to assess undergraduate IL instruction. Ziegler (2019a) described how librarians develop and administer many IL assessment approaches and recommended that IL staff use curriculum maps that outline their processes. Badia (2019) found many strengths and weaknesses in the use of IL question types and suggested alignment of assessments and outcomes being measured. It is important that questions accurately and reliably assess

students' IL knowledge and skills, and these questions need to align with learning goals. Johnson (2017) argued the need for IL instruction of first-year students to be quantitative and connected directly to learning goals. Moran and Mulvihill (2017) recognized the value of using authentic assessment to measure IL instruction outcomes. There are many challenges in matching the best assessment approach with instruction and assessment tools. These assessment challenges are compounded with knowledge, time, and space limitations of both IL instructional librarians and students.

IL Program Weaknesses

IL programs face many effectiveness challenges that can be particularly challenging for one or two-shot session IL models. Librarians struggle to provide an adequate assessment of their IL programs' effectiveness, particularly when limited to only face-to-face instructional models (Greer et al. 2016). Moran and Mulvihill (2017) recognized the need for IL instruction to be sustainable, having the ability to be scaled and maintainable by instructional librarians while effectively meeting many students and their needs. Lowe et al. (2018) argued that college students often fail to understand the advantages of Boolean versus natural language searches. In Boolean searches, information seekers use keywords instead of phrases and sentences as their search terms (Lowe et al., 2018). Gil (2017) found that 50% of students tend to use other students' works located on the Internet in their assignments despite being instructed to find and select their resources from authoritative databases, instigating the need to teach students about plagiarism and using secondary sources. Some IL programs have been designed for online or flipped classroom delivery. However, Rivera (2017) found IL instruction using

a flipped-classroom approach is ineffective and argued that there is no guarantee that students will do the necessary homework.

Implications

Information literacy skills are necessary for academic and career success and lifelong learning (ACRL, 2000). The study's RQs and hypotheses provide implications for an IL assessment project based on research literature and problems reported at the local university. The project's primary goal is to share the study's IL findings and recommendations to the local university's administrators and faculty who have limited time to read the complete study.

The dissertation provides administrators and faculty with recommendations based on the study's findings to determine necessary changes in the university's IL teaching and assessment practices. The dissertation can also provide information to the greater IL profession about rural first-year student IL knowledge and skills. The study uses Kuhlthau's (1991) Information Search Process theory. The results of the project can provide details about students' IL knowledge and skills to be used in future IL teaching and assessment practices.

The study results could lead to IL librarian professional development to improve teaching practices or an improved IL assessment plan that provides a map of student IL development throughout their undergraduate degree program. Additionally, the study results could lead to the development of IL resources for students to use throughout their degree program that supplement IL concepts covered in the first-year student IL program, such as online IL guides and tutorials accessible on-demand should students need

additional support. The study will lead to positive change in the university's IL assessment, ensuring that students have the IL knowledge and skills necessary to be successful academically, professionally, and as lifelong learners.

Summary

The problem instigating this study was a lack of assessment of the IL program's effectiveness in terms of equipping incoming rural first-year students with the university's required IL knowledge and skills. The problem was addressed to ensure that students have the necessary IL knowledge and skills for their academic, career, and lifelong success (ACRL, 2000). While the university is in a rural location and a majority of its students identify as coming from rural backgrounds, the university's administration is working to provide new course, certificate, and degree opportunities with rural studies emphases. The IL program faculty have only recently begun assessing its students to identify the program's effectiveness and had not studied its effectiveness at preparing rural first-year students. A gap in the professional literature and the university's prominent rural student population provided the opportunity to describe the IL knowledge and skills of rural first-year college students. The university has most first-year students who identify as coming from rural backgrounds. The study provides data to address a local concern that the university's IL program for first-year students equips rural students with necessary IL knowledge and skills. The study's results have implications for the university's teaching and assessment practices. Section 2 includes the study's methodology, including the research design and approach used, specifics of participants' setting and population, and the instruments and materials.

Section 2: The Methodology

Introduction

The purpose of this quantitative project study was to address a gap in practice by examining the effectiveness of a university's IL program instruction in terms of preparing incoming rural students to meet the school's IL learning goals necessary for academic, career, and lifelong learning. According to a university instructional librarian, the IL program for first-year students only recently began to measure instructional effectiveness. Kuhlthau's (1991) ISP theory aligns with the university's IL learning goals and is used to identify stages that students experience when solving information problems. The independent variable is the measurement opportunity, or time, of rural student IL knowledge and skills before and after the IL program's instruction. The IL program includes two lessons regarding IL knowledge and skills based on the university's IL learning goals. The dependent variable is the rural students' scores on the assessments before and after IL program instruction.

The study provides data that can be used to help address a gap in the literature about IL knowledge and skills of rural first-year students (Sterling et al., 2017). The study provides data to address the university administration's concern involving the IL program and whether it address first-year rural students' needs. The university's IL program only recently begun assessing effectiveness and did not distinguish instructional effectiveness for rural students, which caused a gap in practice. The university library assessment and IL instructional effectiveness problems are noted in the professional literature (Savage et al., 2017; Wegener, 2018). There was no assessment in place at the

university assessing effectiveness in terms of educating rural first-year students about IL knowledge and skills. The university's unique location and its student body also provided the opportunity to study rural first-year students. I used secondary data regarding the rural first-year students' IL knowledge before and after their participation in the university's IL instructional program for first-year students. An IL program instructional librarian retrieved the archived pretest and posttest scores for all rural first-year students who participated in the IL program during the fall of 2019. After coding each student's assessment for anonymity, the librarian provided an Excel spreadsheet listing the pre and posttest scores for all rural first-year students to me for paired-samples analysis.

I used Kuhlthau's (1991) ISP theory as the study's theoretical foundation because it aligns with the university's IL learning goals and can be useful in analyzing rural first-year students' IL knowledge and skills. Kuhlthau's work is recognized as a prevalent theory used in IL instruction (Black & Allen, 2017). I used the archived quantitative pretest data collected before participation in the university's IL instruction program to compare to posttest quantitative data collected following participation in the program's second instructional session. I used descriptive statistics to determine each rural participant's level of knowledge and skills in terms of meeting each of the university's IL learning goals. Next, I implemented a paired-samples *t* test to determine if the mean differences are significantly different from zero.

Research Design and Approach

I conducted a quantitative study that used secondary pre and posttest data. The instructional librarians use classroom assessments via a survey tool to take quantitative

measures before the first session and following the completion of the second session. The survey data are archived on a secure server. The archived pretest data provided measures taken at the start of the first IL session, which measured student IL knowledge and skills before instruction. The archived posttest data provides student IL knowledge and skills measures taken after IL program instruction. I chose to use secondary archived IL program classroom assessment data since it is aligned with SRU's IL learning goals and includes measures of rural first-year student participants. The study's quantitative methodology aligns with the university's need for quantitative effectiveness data and the IL program's assessment data (ACRL, 2018).

Research Design

This quantitative study used a quasi-experimental research design. Pretest data provided measures of students' beginning IL knowledge and skills before IL instruction. The archived posttest data provide measures of students' IL knowledge and skills after both IL instructional sessions. I used the pre and posttests archived data to test and address the study's problem, which is the lack of IL program assessment targeting rural students. The use of the archived pre and posttests provided data that led to a better understanding of the university's IL program effectiveness in terms of equipping rural first-year students with the IL knowledge and skills required for the university's IL learning goals as well as a professional literature gap on rural student IL knowledge and skills.

This study has a quantitative design, which is also found in Kuhlthau's (1988, 1991) Information Search Process (ISP) theory research in which Kuhlthau investigated

university, college, and secondary students learning and usage of IL knowledge and skills. IL program instructors use Kuhlthau's ISP theory in teaching the ACRL (2000) IL standards (Black & Allen, 2017). The study's quantitative methodology and secondary quantitative data design align with the ACRL (2018) quantitative data requirements for library effectiveness. Using a quantitative approach allowed for greater objectivity in the rating of student IL knowledge and skills.

Research Design and Approach Justification

The university lacks evaluative information regarding the IL program for first-year students' effectiveness in terms of preparing rural first-year students with necessary IL knowledge and skills. Also, the IL program librarians have only recently begun to assess first-year students for instructional effectiveness. The study's use of archived quantitative data and a quantitative methodology had many advantages. The use of archived data and a quantitative approach provided objectivity in data collection and analysis and allowed for anonymity. The analysis provided data to address a local concern of the IL program for first-year students adequately preparing rural students with necessary IL knowledge and skills and help address the gap in literature.

How the Research Design Derives from the Problem

The study was focused on the effectiveness of an IL program's instruction at equipping rural first-year students with IL knowledge and skills. The IL knowledge and skills are determined by the university's IL learning goals that the IL program is designed to teach. The university currently uses a quantitative capstone course IL assessment. However, the IL program only recently begun to quantitatively assess students to

determine its effectiveness in terms of teaching student IL knowledge and skills. The IL program did not have a target assessment for effectiveness at preparing rural first-year students with required IL knowledge and skills.

The university's prominent rural student population provided the opportunity to address a gap in the professional literature about rural student IL knowledge and skills. The IL program's rural first-year students were quantitatively assessed before IL instruction to determine their IL knowledge and skills. IL program for first-year students' instruction is based on the university's IL learning goals and uses Kuhlthau's ISP in two consecutive sessions. The rural first-year students are then assessed following the IL program's instruction to determine their level of IL knowledge and skills. The study used the archived quantitative assessment data to study the IL program's effectiveness for rural first-year students. The study resulted in data specifically on rural students that can help address a gap in professional literature and address local concerns of the university's IL program adequately equipping rural students with necessary IL knowledge and skills.

Setting and Population

This study's student population was at a small regional master's class university in the rural southern United States. According to SRU's 2020 demographic data, the university had a total enrollment in the fall of 2019 of 4,475 students, with 833 first-year freshmen students. In the fall of 2019, 69.23% of the university's first-year freshmen student population reported coming from rural counties.

Sampling Strategy

The study used secondary data on the university's IL program's rural first-year student participants in its sample for the fall of 2019. A selected IL program librarian collected the archived data from the program's pre- and post-assessments. The selected IL librarian used the university registration system to identify the county and state of the participants. The selected IL librarian then used the United States' Census Bureau (2015) map of rural counties to identify rural or urban students. The study used only rural students. The study excluded participants who did not complete both the pre- and post-assessments. The selected IL program librarian collected assessment data, codified the participants for anonymity, and provided the raw pre and posttest scores for each participant to me in an Excel file.

Population Size

I conducted an a priori G*Power analysis for a two-tailed t test using paired-samples with a power of 0.95 and an alpha of 0.05, which indicated a needed sample size of 54 participants minimum. However, the study used a quantitative method and studied the SRU's entire IL program rural first-year student population for fall 2019, which helped address the effect of a less powerful intervention. Three instructional librarians teach the university's first-year IL workshops to 707 students in the first workshop and 684 students in the second workshop. There were 783 assessments collected from students attending the first workshop, and 677 from the second workshop. According to SRU's fall 2019 cohort demographics, 69.23% of first-year students identified as coming from rural backgrounds. After the urban students were removed and the data were

cleaned, there were 96 pre and posttest matched pairs remaining. The IL instructional librarians teach using the same presentation, format, and instructional materials. The IL instructional librarians administer the pre and posttests to the first-year IL session classes using a secure survey tool that collects participant data from each instructors' classes.

Participant Eligibility Criteria

Participants provided their university identification information in the pre- and post-assessments. The selected IL program librarian used the university identification information and the university's registration system to identify the county where the students graduated high school to determine which students would participate in the study. The selected IL program librarian used the United States Census Bureau's (2015) map of rural counties to check each student's county for rural status. Participants coming from outside the United States were excluded because their rural county status cannot be confirmed by the United States Census Bureau (2015) census map. Participants from rural counties were considered for participation in the study if they had completed both IL program workshops and the associated pre and posttests.

Recruitment of Participants

The data used came from the university IL program's survey tool assessment archives. Before I received the data, the student identification was removed. The selected IL program librarian collected data from the survey tool, identified rural students, coded for anonymity, and prepared data for analysis. As the data collection came from secondary data taken through routine classroom assessments and was coded for anonymity, informed consent was not necessary. For participant data to be included in the

study, the student participants needed to be identified as coming from a rural county, complete both IL program workshops, and the pre and posttests. The participants have unique identifiers on the pre and posttests that the selected IL instructional librarian matched for paired-samples testing.

Characteristics of the Selected Sample

The selected sample has students that graduated from rural high schools in the United States. According to university's fact book, the fall freshmen student population comes primarily from a rural three-state region with outliers from urban areas in the continental United States and an even more minute number of students from international backgrounds. The rural student population members participated in both IL program workshops and completed the associated pre and posttests that were matched for paired-samples testing. It is expected that the archived IL program data are similar in the urban/rural make-up of the university's broader undergraduate population, with approximately 58% of students coming from rural backgrounds. After the urban students were removed and the data were cleaned, there were 96 pre and posttest matched pairs remaining. There were 78 of the 96 matched pairs identified as having rural backgrounds. The students participating in the IL workshops have a mixture of majors and backgrounds.

Instrumentation and Materials

The study used secondary data of pre- and post-assessments that are the same tools used in students' baccalaureate capstone courses to assess for the university IL goals. As archived data from an existing aligned IL assessment is available, I decided it

would be more efficient to use the archived data instead of developing and administering a new instrument or administering an outside published instrument. The current pre- and post-assessments are the VALUE rubrics that are considered valid and reliable for college students (Pike & McConnell, 2018).

Description of the Instrument

The archived data came from the IL program's pre- and post-assessments that are aligned with the university's baccalaureate capstone IL assessment, which is also aligned with the VALUE rubric. The VALUE rubric was adopted in conjunction with the university's faculty and assessment team in 2012 to measure the university's IL learning goals. The VALUE IL rubric aligns with each of the university's IL goals. The baccalaureate capstone IL assessment and VALUE rubric were put into service in the fall of 2013 and is currently being used (see Appendix C). Over 70,000 individuals have downloaded the VALUE rubrics from over 2,100 colleges and universities (Pike & McConnell, 2018). An interdisciplinary group of faculty from the United States developed the VALUE rubric (Finley, 2011). The VALUE rubric was tested for reliability with a Kappa score for perfect agreement being .18, approximate agreement for four categories being .42, and approximate agreement for three categories being .69 (Finley, 2011). Kappa scores are multi-rating and range from -1 to 1, where -1 indicates absolute disagreement, and +1 indicates complete agreement beyond chance (Finley, 2011). The IL program adopted the VALUE rubric for its assessments in the fall of 2019.

The VALUE rubric was duplicated and renamed as the University Information Literacy Program pre and posttests, and it is used as the university's IL program

assessment instrument. The use of archived student pre- and post-assessments or University Information Literacy Program (UILP) pre and posttests (see Appendix D) is preferred to keep the assessment tool and process aligned with the university's existing baccalaureate instrument and processes. The use of the existing assessment that aligns with the university's IL learning goals complies with Johnson's (2017) argument that first-year student IL assessments be quantitative and directly connected to the learning goals. The study's data came from the UILP pre and posttests that are used as part of routine classroom assessments before the first ILP instruction session and following the second ILP instruction session. The UILP pre and posttests are identical except for the differing, but comparable, information problems presented. Both UILP versions require the students to demonstrate the same IL knowledge and skills in the same order but require students to identify different information problems and access and use different information resources.

Concepts Measured by the Instrument

The UILP is part of the university's overall baccalaureate learning goal assessment. The UILP assesses the five university IL learning goals and aligns with the AAC&U's VALUE IL rubric. IL knowledge and skills are central in academic and professional skills and everyday information problems, such as identifying and resolving problems with fake news (Fielding, 2019). Siefert (2011) found in a study of university students that 85.9% or more of students scored a 2 or higher on each of the IL standards with 39.7% or more of students scoring 3 or higher. Similarly, Goncalves, Bennett, Murray-Chandler, and Hall (2018) found that comparable groups of students had a mean

score of 2.96 and 2.19. However, the scores only provide a partial view of student IL knowledge and skills. The study's combining of Kuhlthau's (1991) ISP theory with the UILP provides more details about the students' IL knowledge and skills. Since the university's IL goals involve demonstrating skills, students are asked to solve information problems that require the use of information resources. Students are presented the information problem in which they must first determine the extent of information needed, as described in the university's IL Goal 1. This initial phase requires students to define the scope of the RQ and the types of information related. During this process, students experience feelings of uncertainty as they begin to recognize the information problem and general topic for investigation (Kuhlthau, 1991). Should students not identify the information problem and general topic, they are not likely to proceed to the next phases. For example, if students do not recognize the presence of an information problem, they will not need to access information. These two initial processes align with the study's SQ 1, the first item on the UILP, and IL program's effectiveness at teaching students how to determine the extent of information needed. Students must then access the required information by performing strategic searches, as described in university IL goal 2. Kuhlthau (1991) recognized that when students access and explore resources, they are investigating information for relevancy and continue to have feelings of confusion, frustration, and doubt. Should students not access and explore information resources, they cannot move to the next phases. This access and exploration phase aligns with SQ 2, the second item on the UILP, and the IL program's effectiveness at teaching students how to access needed information. As students continue accessing and exploring resources, they

continue to the evaluation process in which they identify their and others' assumptions. The evaluation process aligns with the university's IL goal 3. Kuhlthau (1991) recognized that students during evaluation begin to formulate a focus of the needed information and begin having feelings of clarity and increased confidence. Should students not evaluate and identify the topic focus for their information needs, they cannot move to the next phases. The evaluation and formulation phase aligns with SQ 3, the third item on the UILP, and the IL program's effectiveness at teaching students how to evaluate information and its sources critically. As students continue to identify and locate relevant information resources, they begin to collect and use the resources to resolve the information problem. This use of information process aligns with university IL goal 4 and Kuhlthau's (1991) collection phase in which students have feelings of direction and confidence as they gather information resources for possible use. Should students be unable to collect and use information resources, they cannot proceed to resolve the information problem. The collection phase aligns with SQ 4, the fourth item on the UILP, and the IL program's effectiveness at teaching students how to use information effectively to accomplish a specific purpose. Once students have collected the needed information resources, they begin using them to present solutions to the information problem. The students' use of the information resources to resolve the problem requires them to follow ethical and legal guidelines that align with university IL goal 5. The students present their findings, including the resources where they found the information solution. Kuhlthau (1991) defined this final stage as presentation and recognized students as having feelings of relief and satisfaction for resolving the information problem or

disappointment if the solution is not found. Should the students not find a solution, they cannot present information and must return to previous stages or leave the information problem unresolved. The usage phase aligns with research SQ 5, the fifth item on the UILP, and the IL program's effectiveness at teaching students how to present and use information ethically and legally to solve an information problem.

Calculation of Scores and Their Meaning

Descriptive and inferential statistics were calculated using the participant responses. The UILP pre and posttests are the same as the university's undergraduate capstone course IL assessment tool, which aligns with each of Kuhlthau's (1991) ISP stages and each of the university's IL learning goals. Descriptive statistics can provide an indication of IL instruction effectiveness through an increase in pre and posttests means. The means were calculated for each SQ on the IL pre and posttests. A low mean below 2 ($M = 0.00-2.0$) indicates that students have little IL knowledge or low skill levels, which may instigate a need for IL instruction changes. A mid-level mean ($M = 2.0-3.0$) indicates that students have average IL knowledge and skills but could improve, which might lead to changes in IL instruction. A high means greater than 3 ($M = 3.0-4.0$) indicates that students have strong to sufficient IL knowledge and skills and might need little or no improvement, which might lead to little or no changes in IL instruction.

Data Collection and Analysis

The secondary data collected were retrieved from the IL program's assessment archives. The assessment data were collected via a secure survey tool. The data are stored on a secured server and are retained for at least five years.

Data Required for the Research Questions

The necessary secondary data to answer the study's RQs came from the IL program's secure survey tool and the university's student registration system. The secure survey tool stores the IL program's UILP pre and posttest responses. The UILP pre and posttests are available in Appendix D.

How Data Aligns with the Research Questions

The UILP pre and posttest responses include different but comparable information problems, students' university identification, a prompt for a summary statement and Modern Language Association (MLA) citation, and a prompt for an MLA reference for the used resource. The UILP's university identification was used to search the university's student registration system to identify the county where the student graduated high school. The county was checked on the United States Census Bureau (2015) map to identify if the student came from a rural or urban county. The UILP's responses for a summary statement and MLA citation was used to identify if the students had determined the extent of information needed (university IL goal 1), used the information effectively to accomplish a specific purpose (university IL goal 4), and accessed and used information ethically and legally (university IL goal 5). The UILP's MLA reference prompt will provide responses for determining if students have accessed the needed information (university IL goal 2) and evaluated the information and its sources critically (university IL goal 3). Combined, the UILP pre and posttests responses can be used to answer the study's overarching RQ and SQs.

Data Collection Process

One of the IL program librarians was selected to collect secondary data from the program's secured survey tool. The selected librarian used the participants' responses to the pre and posttests (see Appendix D) for student university identification and searched the university's student registration system to identify the county of graduation for each participant. The selected librarian then compared each participant's county against the United States Census Bureau's (2015) rural counties map to identify for rural or urban status. The selected librarian collected rural participants' data to be included in the study. The selected librarian scored the rural students' responses using the UILP Grading VALUE Rubric (see Appendix C). The selected librarian retrieved pre and posttest scores for all rural first-year students in the fall of 2019. After coding each student's assessment for anonymity, the selected librarian provided an Excel 2016 spreadsheet listing the pre and posttest scores for all rural first year students. The selected librarian stored the data on a secure server, then sent the coded, scored data to me in an Excel file. I used the Excel file to upload as a dataset into IBM's SPSS version 25, a statistical analysis software, to conduct analysis.

Procedure for Gaining Access to Secondary Data and Required Permissions

The selected librarian is the university's systems librarian who is responsible for IL program's secure survey tool that is used in collecting participant data. The selected librarian is also the university's assistant library director with university administrator status and access to the school's student registration system. As the university's systems librarian, the selected librarian is responsible for collecting, securing, and using the IL

program's assessment data. As the university's assistant library director, the selected librarian is responsible to confirm that all university students are authenticated in the library's systems using the university's student registration system. No special permissions were required for the selected librarian to access and use the IL program's secure survey tool data or the university's student registration system.

Nature of the Scale for Each Variable

The UILP pre and posttest have two groupings of time. The first-time group is the student pretest group, and the second time group is the posttest group, which were used for paired-samples testing. The independent variable is the measurement opportunity, or time, of rural student IL knowledge and skills before and after IL program instruction. The dependent variable is the rural students' scores on the UILP measuring IL knowledge and skills. The paired-samples were used to indicate if students' mean scores were significantly different between the pre and posttest measurements. Each item of the UILP pre and posttests is aligned to each of the study's research SQs and separate dependent (paired-samples) *t* tests were conducted.

Data Analysis Plan

Descriptive statistics were used to calculate the means for the responses on IL pre and posttests. These means were used to help answer the study's overarching RQ and SQs. A low mean below 2 ($M = 0.00-2.0$) indicates that students have little IL knowledge or low skill levels. A mid-level mean ($M = 2.0-3.0$) indicates that students have average IL knowledge and skills but could improve. A high means greater than 3 ($M = 3.0-4.0$) indicates that students have strong to sufficient IL knowledge and skills and might need

little or no improvement. The pretest means provided an indicator of what level of IL knowledge and skills students have overall before the IL program instruction treatment. The posttest means provided an indicator of what level of IL knowledge and skills students have overall after receiving the IL program instruction treatment. The calculation means for each of the UILP grading areas provided indicators for what levels of IL knowledge and skills students have for each of the study's SQs.

Inferential analysis was conducted using paired-samples *t* tests for the individual difference between the pre and posttest. The mean difference total, Δt , for the pre and posttest groups provided an indicator of any overall differences between the pre and posttest groups with significant difference being at or below the $p = 0.05$ level, $\Delta t = 0$. Paired-samples *t* tests were conducted for each of the pre and posttest SQ means and provided indicators of any differences with significant difference being at the $p = 0.05$ level.

Assumptions, Limitations, Scope and Delimitations

I made several assumptions in this study. These assumptions surround SRU's IL learning goals and the research methodology. The study's scope is narrow and has some delimitations.

Assumptions

There are assumptions that are assumed to be true but are not verified. The assumptions relate to the university's IL learning goals and use of the VALUE Rubric. Assumptions were also made concerning the study's methodology.

SRU's IL learning goals and use of the VALUE Rubric.

- The SRU IL learning goals based on the ACRL (2000) IL standards are applicable to being assessed by the VALUE Rubric for rural students. Pike and McConnell (2018) described the VALUE Rubric's wide-scale use to measure learning goals, including IL learning goals. It is assumed that the VALUE Rubric is suitable for measuring rural students' IL knowledge and skills.
- Kuhlthau's (1991) ISP accurately identifies stages that students succeed or fail to achieve when resolving information problems.
- Student means of 2.0 or higher on the VALUE Rubric indicate that the students have adequate IL knowledge and skills to be academically successful, as indicated by SRU's university assessment office director.

Methodology.

- All rural participants of the first-year IL program were motivated to complete the UILP pre and posttest classroom assessments.
- All rural participants understood the items of the UILP pre and posttests.
- The IL program's survey tool accurately collects and stores IL program assessments.
- The data are accurate in the student registration system.

Potential Weaknesses and Limitations

This study has weaknesses and limitations. Weaknesses include variances in the rural students' backgrounds and that are not addressed in the study's assumptions. For

example, Yu et al. (2017) recognized that rural students might have deficiencies in reading, computer skills, and information resource experiences due to lack of access or digital divide. These factors could influence students' responses to UILP pre and posttest items by students not comprehending what they are being asked, being less experienced with computers, and less familiar with information resources that impede them from completing the instruments. Similarly, rural students have been reported to have trouble cognitively performing college-level work (Hlinka, 2017).

Students could successfully complete the IL program but fail to incorporate their learnings in the academic, career, and daily information problem practices. Hlinka (2017) described rural students as having family backgrounds that undervaluing education. Similarly, Hlinka reported that rural students fail to integrate, reflect, and apply concepts learned in their academic studies. IL program participants may devalue the instruction they receive and not apply it to their information problems.

Scope and Delimitations

Based on Walden's project study criteria, the study's scope is that a local problem be addressed. The scope is one university's rural students who participated in the school's first-year student IL program. However, rural students could vary from the one region of the southern United States that the university serves to other rural regions. The use of a more representative group of participants from rural areas across the United States could help describe rural student IL knowledge and skills backgrounds better and allow generalizing of findings to other rural populations.

A delimitation is the varied backgrounds of the rural students. While all participants came from counties with a population less than 65,000, they came from different high school districts that may vary in their IL instruction. D’Orio (2019a) described only 25% of high schools as having libraries with programs preparing students for college academic work. The students could have different IL knowledge and skill levels entering the IL program workshops. Another delimitation could be the time of day that students completed the IL program during the semester. For example, students completing the workshops later in the semester may have been exposed to other classes to solving information problems.

Limitations of Evaluation

The study’s evaluation is based on one university’s IL program for first-year students. There are three instructional librarians who teach in SRU’s IL program. While the instructional librarians use the same content and similar facilities, it is expected that there are differences in their instructional approaches. The UILP pre and posttest archive data included all participants to help normalize data. However, the data did not distinguish each student’s IL program instructor. Therefore, the study’s evaluation cannot determine individual instructor effectiveness.

The study’s analysis is based solely on rural students. As the local problem focuses on rural studies, no comparison can be made to urban students. A focus on urban students could be studied in a future study.

Protection of Participants' Rights

The study has several approaches to protecting participants, including using the National Institutions of Health's Protecting Human Research Participants training. The study used secondary data collected during routine classroom assessments that was anonymized by a selected librarian to protect students' identities. The data is stored electronically on a secure server and will be maintained a minimum of 5 years before being deleted. SRU's Institutional Review Board (IRB) provided approval to use anonymized routine classroom assessment data. Approval was provided via Walden's IRB (IRB approval #05-06-20-0663353).

Data Analysis Results

The following sections include the results of the study's data analysis. The data analysis includes several processes that aligned the problem, theoretical framework, and RQs and hypotheses.

Response Rate

The population size was 459 identified rural freshmen students to participate in the university's IL program, according to SRU's 2020 fact book. However, a survey system error was discovered causing a loss for some individual item responses. The error recorded the student participants' university identifiers but did not capture IL item responses. As a result, IL item response data was collected for 78 rural students in the dataset. All rural students were included, meeting the needed sample size of 54 participants minimum per the a priori G*Power analysis for a two-tailed t test using paired-samples with a power of 0.95 and an alpha of 0.05.

There were additional discrepancies discovered during the data collection process. SRU had a first-year freshmen enrollment of 833 students for the fall of 2019, according to the SRU 2020 fact book. For fall 2019, the IL program instructors recorded 707 student participants for the first workshop during which students complete the UILP Pretest prior to the lesson. The IL program instructors recorded 684 student participants for the second workshop, during which students complete the UILP posttest following the lesson. An investigation of the beginning freshmen enrollment and recorded IL program participants indicates that not all students participated in the IL program. Further, 23 fewer students in the second workshop might indicate some students attended the first workshop but chose not to complete the second workshop. While the required minimum number of participants was met for the study, the IL program does not deliver instruction or capture results for all beginning freshmen.

Outliers

There were no outliers in the overall post and pre-mean group differences (RQ 1) as assessed by inspection of a boxplot for values greater than 1.5 box-lengths from the edge of the box (see Figure 1). A boxplot of differences for each research SQs 1 through 5 produced only outliers for research SQ 5. Five outliers were detected using a boxplot (see Figure 2). All outliers for all RQs were included in the analyses since the data was collected correctly as confirmed with the selected librarian. There are no extreme outliers in the five research SQs.

Figure 1

Boxplot of Overall Post and Pre-Mean Differences

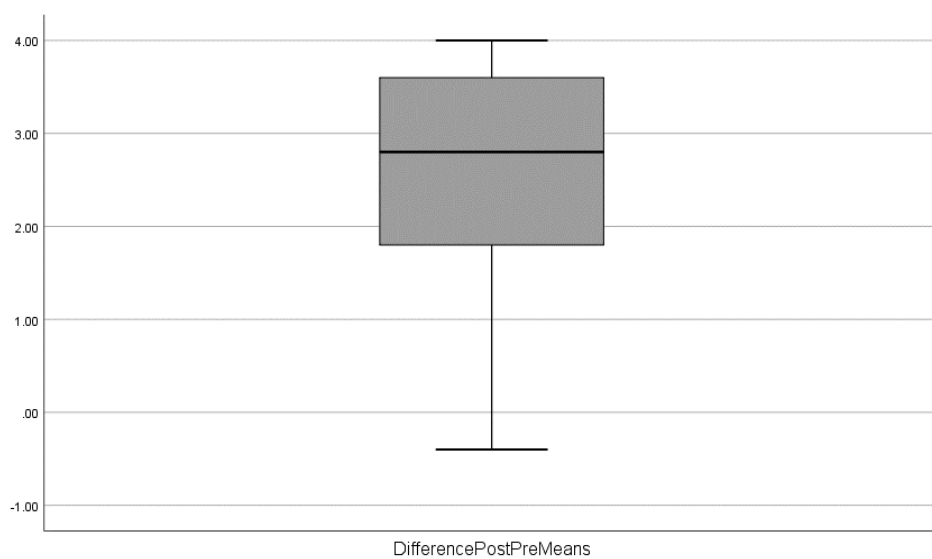
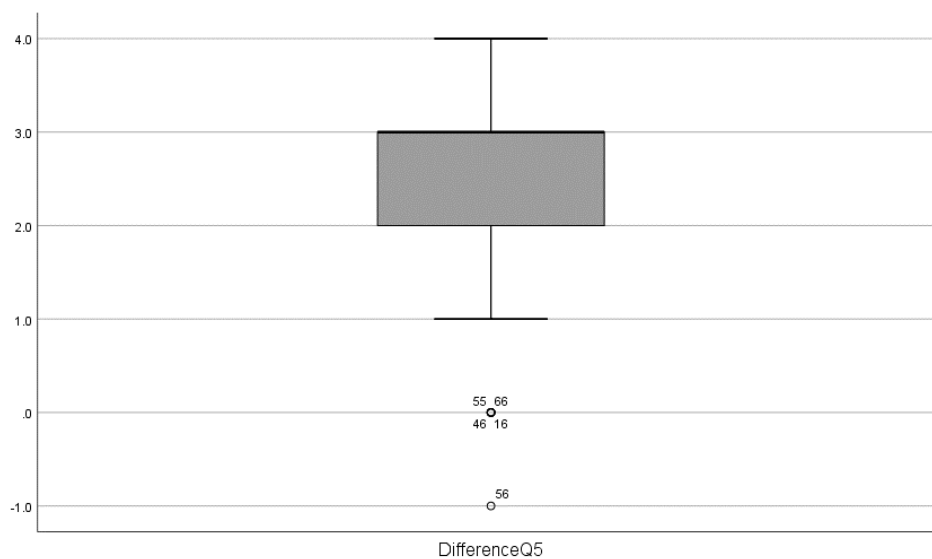


Figure 2

Boxplot of Overall Post and Pre-Mean Differences for Pair 5



Testing Paired-Sample *t*-Test Assumptions

Paired Samples *t*-test Assumptions

The assumptions of the paired-samples *t*-test are applied to the data that represent the difference. There are three basic assumptions. First, the data are continuous (Kim & Park, 2019; Laerd Statistics, 2015; NCSS, 2020; Peat & Barton, 2005). Second the data are matched-pairs and have a normal distribution (Laerd Statistics, 2015; NCSS, 2020; Peat & Barton, 2005; Salkind, 2007). Third, the sample pairs are random sample from the population (Kim & Park, 2019; NCSS, 2020).

Addressing of Assumptions

The study's pretest IL instruction and a posttest following instruction constituted the ratio data and matched-pairs requirements. The pairs were matched in a meaningful way since these were pre and posttest for each participant. The observations were independent and no student's response affected another student's responses. The study used all rural students from the fall 2019 IL program for first-year students constituting a population rather than a sample.

The visual test for normality are Q-Q Plots (Salkind, 2007), so the Normal Q-Q Plot was used to test for differences between the paired-samples group and the normal distribution of differences (see Figure 3). The Shapiro-Wilk test was used to test for normality. The null hypotheses for the Shapiro-Wilk test is that the data is normally distributed. Since the *p* value for all five research SQs is less than 0.001, the null hypotheses is rejected (see Table 3). A visual inspection of the pre and posttest mean

histograms show the distribution for the RQ and SQs, confirming the skewed distributions. Therefore, the data violated the assumption of normality.

For the following reasons, I decided to continue with the analysis even though there is a violation of normality.

- My data size is greater than 30 and considered large. I used a power of .95. The large data size at a high power reduces the chance of type II error.
- I am using the population, not a sample; therefore, no sample error.
- There are no extreme outliers, so an alternate test like the Man-Whitney will not affect the results (See Figures 1 and 2).
- The skewness is negative for the differences between post-pretests. The skewness of the plots occur between $-.587$ and -1.119 , indicating a negative skewness for the differences between post- and pretests (see Table 4). This is within acceptable skewness boundaries.
- The kurtosis values are less than 3 and considered fairly uniform (“Kurtosis,” 2001). The kurtosis values range between -1.041 and 1.72 for the SQs, falling between acceptable boundaries (see Table 4).
- Power is maximized when the sample size ratio between two groups is 1 to 1 (Kim & Park, 2019)
- The paired-samples t test is robust to violations of normality with respect to Type I error (Rasch & Guiard, 2004; Wiedermann & von Eye, 2013).

Therefore, I proceeded with the violation on normality.

Figure 3

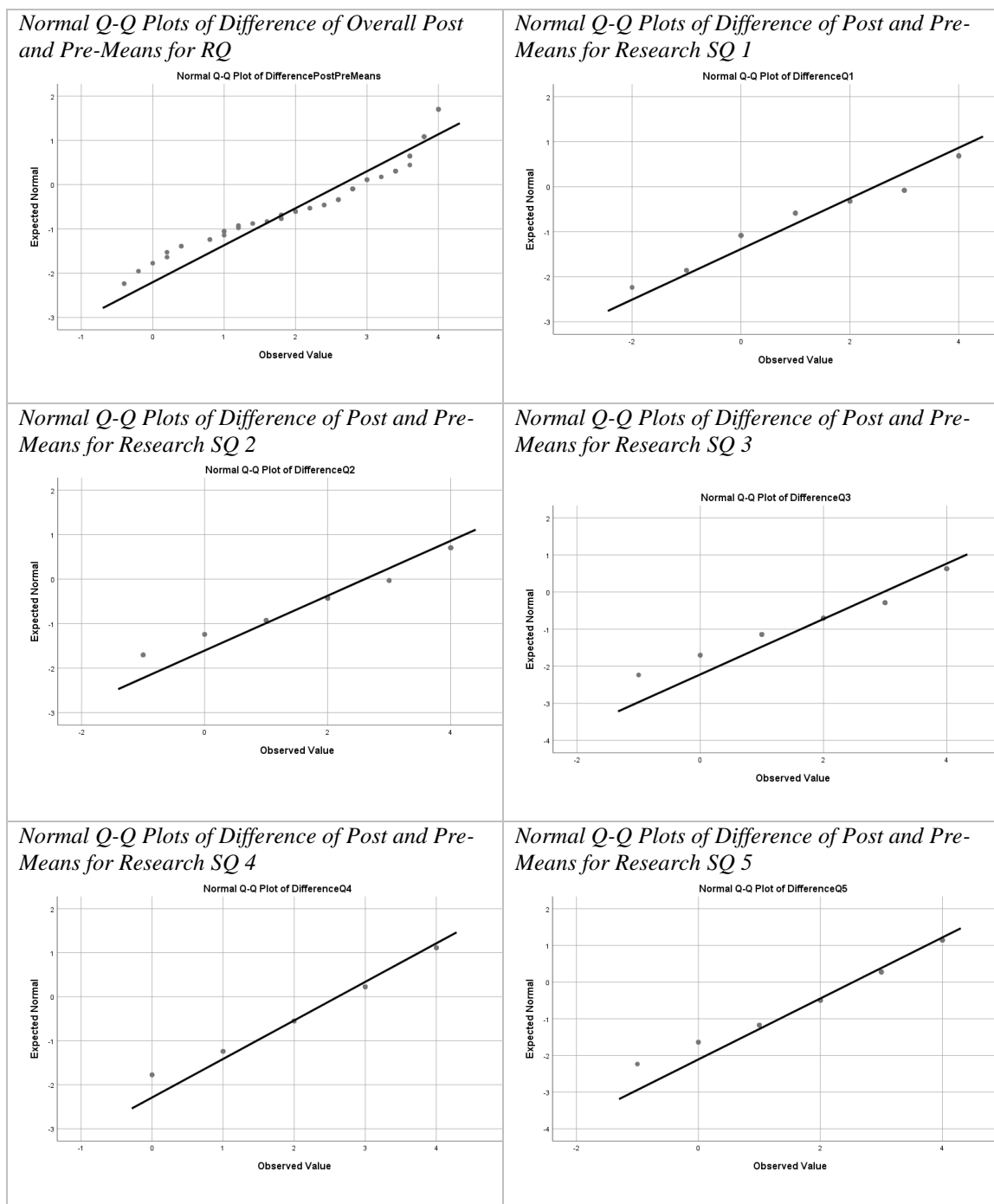
Normal Q-Q Plots of Difference of Post and Pre-Means

Table 3

Tests of Normality: Shapiro-Wilk

	Tests of Normality		
	Statistic	Shapiro-Wilk df	Sig.
Difference Post/Pre SQ 1	.790	78	.000
Difference Post/Pre SQ 2	.801	78	.000
Difference Post/Pre SQ 3	.767	78	.000
Difference Post/Pre SQ 4	.881	78	.000
Difference Post/Pre SQ 5	.888	78	.000

Table 4

Skewness and Kurtosis of Pre and Post Subquestion Differences

SQs	Skewness	Kurtosis
1	-.661	-1.041
2	-.882	-.316
3	-1.119	1.72
4	-.587	-.216
5	-.690	.152

Research Questions and Hypotheses

The IL program for beginning first-year students aims to prepare students to meet the university's IL learning goals which led to the development of the study's overarching RQ. SRU has five IL learning goals which led to the study's five research SQs. Tables 5 and 6 provide summary statistics of the five research SQs for rural first-year students participating in the SRU's IL program for first-year students.

Table 5

Learning Goal Paired Samples Descriptive Statistics

		Paired Samples Statistics			
		Mean	N	Std. Deviation	Std. Error Mean
SQ 1	Post IL LG 1	3.87	78	.466	.053
	Pre IL LG 1	1.41	78	1.694	.192
SQ 2	Post IL LG 2	3.28	78	.979	.111
	Pre IL LG 2	.68	78	1.157	.131
SQ 3	Post IL LG 3	3.55	78	.892	.101
	Pre IL LG 3	.58	78	1.134	.128
SQ 4	Post IL LG 4	3.00	78	.912	.103
	Pre IL LG 4	.38	78	.725	.082
SQ 5	Post IL LG 5	2.92	78	.964	.109
	Pre IL LG 5	.38	78	.777	.088

Table 6

Learning Goal Paired Differences

		Paired Samples Test								
		Paired Differences						t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Mean	Lower	Upper				
SQ 1	Post IL LG 1	2.462	1.778	.201	2.061	2.862	12.228	77	.000	
	- Pre IL LG 1									
SQ 2	Post IL LG 2	2.603	1.622	.184	2.237	2.968	14.167	77	.000	
	- Pre IL LG 2									
SQ 3	Post IL LG 3	2.974	1.338	.152	2.673	3.276	19.626	77	.000	
	- Pre IL LG 3									
SQ 4	Post IL LG 4	2.615	1.142	.129	2.358	2.873	20.222	77	.000	
	- Pre IL LG 4									
SQ 5	Post IL LG 5	2.538	1.203	.136	2.267	2.810	18.640	77	.000	
	- Pre IL LG 5									

Note. N = 78

Research Question 1

RQ1: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills?

Null Hypothesis: There is no significant difference between the pre and post test scores for incoming rural first-year students' IL knowledge and skills.

Alternative Hypothesis: There is a significant difference between the pre and post test scores for incoming rural first-year students' IL knowledge and skills.

A paired-samples *t* test was used to determine whether there was a statistically significant change in scores between the student participant QILP performance before participation in IL instruction and following IL instruction. The confidence interval (CI) indicates a 95% confidence that the true mean difference lies somewhere within an interval (Laerd Statistics, 2015). Cohen's *d* was calculated to determine the effect size with .2 indicating a small strength, .5 a medium strength, and .8 a large strength (Laerd Statistics, 2015). Students participants of IL instruction delivered an improved and a competent performance following IL instruction ($M = 3.326$, $SD = .6899$) as opposed to pre-IL instruction performance ($M = .687$, $SD = .9769$), a statistically significant mean increase of 2.639, 95% CI [2.369 - 2.908], $t(77) = 19.467$, $p < .001$, $d = 2.20$. The mean difference was a statistically significant change in scores from zero. Therefore, the null hypothesis can be rejected. There is significant difference.

Research SQ 1

SQ 1: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills for determining the extent of information needed?

H_01 : There is no significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for determining the extent of information needed. $\Delta t = 0$.

H_{a1} : There is a significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for determining the extent of information needed. $\Delta t \neq 0$.

A paired-samples t test was used to determine whether there was a statistically significant change in scores between the student participant QILP performance before participation in IL instruction and following IL instruction for IL learning goal 1 corresponding with SQ 1.

Students participants of IL instruction delivered an improved and a competent performance following IL instruction ($M = 3.87$, $SD = .466$) as opposed to pre-IL instruction performance ($M = 1.41$, $SD = 1.694$) (see Table 5), a statistically significant mean increase of 2.462, 95% CI [2.061 - 2.862], $t(77) = 12.228$, $p < .001$, $d = 1.385$ (see Table 6). The mean difference was a statistically significant change in scores from zero. Therefore, the null hypothesis can be rejected. There is significant difference.

Research SQ 2

SQ 2: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills for accessing the needed information?

H_02 : There is no significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for accessing the needed information. $\Delta t = 0$.

H_{a2} : There is a significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for accessing the needed information. $\Delta t \neq 0$.

A paired-samples t test was used to determine whether there was a statistically significant change in scores between the student participant QILP performance before participation in IL instruction and following IL instruction for IL learning goal 2 corresponding with SQ 2.

Students participants of IL instruction delivered an improved and a competent performance following IL instruction ($M = 3.28$, $SD = .979$) as opposed to pre-IL instruction performance ($M = .68$, $SD = 1.157$) (see Table 5), a statistically significant mean increase of 2.603, 95% CI [2.237 - 2.968], $t(77) = 14.167$, $p < .001$, $d = 1.605$ (see Table 6). The mean difference was a statistically significant change in scores from zero. Therefore, the null hypothesis can be rejected. There is significant difference.

Research SQ 3

SQ 3: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills for evaluating information and its sources critically?

H_{03} : There is no significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for evaluating information and its sources critically. $\Delta t = 0$.

H_{a3} : There is a significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for evaluating information and its sources critically. $\Delta t \neq 0$.

A paired-samples t test was used to determine whether there was a statistically significant change in scores between the student participant QILP performance before participation in IL instruction and following IL instruction for IL learning goal 3 corresponding with SQ 3.

Students participants of IL instruction delivered an improved and a competent performance following IL instruction ($M = 3.55$, $SD = .892$) as opposed to pre-IL instruction performance ($M = .58$, $SD = 1.134$) (see Table 5), a statistically significant mean increase of 2.974, 95% CI [2.673 – 3.276], $t(77) = 19.626$, $p < .001$, $d = 2.223$ (see Table 6). Therefore, the null hypothesis can be rejected. There is significant difference.

Research SQ 4

SQ 4: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills for using information effectively to accomplish a specific purpose?

H_{04} : There is no significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for using information effectively to accomplish a specific purpose. $\Delta t = 0$.

H_{a4} : There is a significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for using information effectively to accomplish a specific purpose. $\Delta t \neq 0$.

A paired-samples t test was used to determine whether there was a statistically significant change in scores between the student participant QILP performance before participation in IL instruction and following IL instruction for IL learning goal 4 corresponding with SQ 4.

Students participants of IL instruction delivered an improved and a competent performance following IL instruction ($M = 3.00$, $SD = .912$) as opposed to pre-IL instruction performance ($M = .38$, $SD = .725$) (see Table 5), a statistically significant mean increase of 2.615, 95% CI [2.358 - 2.873], $t(77) = 20.222$, $p < .001$, $d = 1.896$ (see Table 6). The mean difference was a statistically significant change in scores from zero. Therefore, the null hypothesis can be rejected. There is significant difference.

Research SQ 5

SQ 5: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills for accessing and using information ethically and legally?

H_{05} : There is no significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for accessing and using information ethically and legally. $\Delta t = 0$.

H_{a5} : There is a significant difference between the pre and posttests scores for incoming rural first-year students' IL knowledge and skills for accessing and using information ethically and legally. $\Delta t \neq 0$.

A paired-samples t test was used to determine whether there was a statistically significant change in scores between the student participant QILP performance before

participation in IL instruction and following IL instruction for IL learning goal 5 corresponding with SQ 5.

Students participants of IL instruction delivered an improved and a competent performance following IL instruction ($M = 2.92$, $SD = .964$) as opposed to pre-IL instruction performance ($M = .38$, $SD = .777$; see Table 5), a statistically significant mean increase of 2.538, 95% CI [2.267 - 2.810], $t(77) = 18.640$, $p < .001$, $d = 2.110$ (see Table 6). The mean difference was a statistically significant change in scores from zero. Therefore, the null hypothesis can be rejected. There is significant difference.

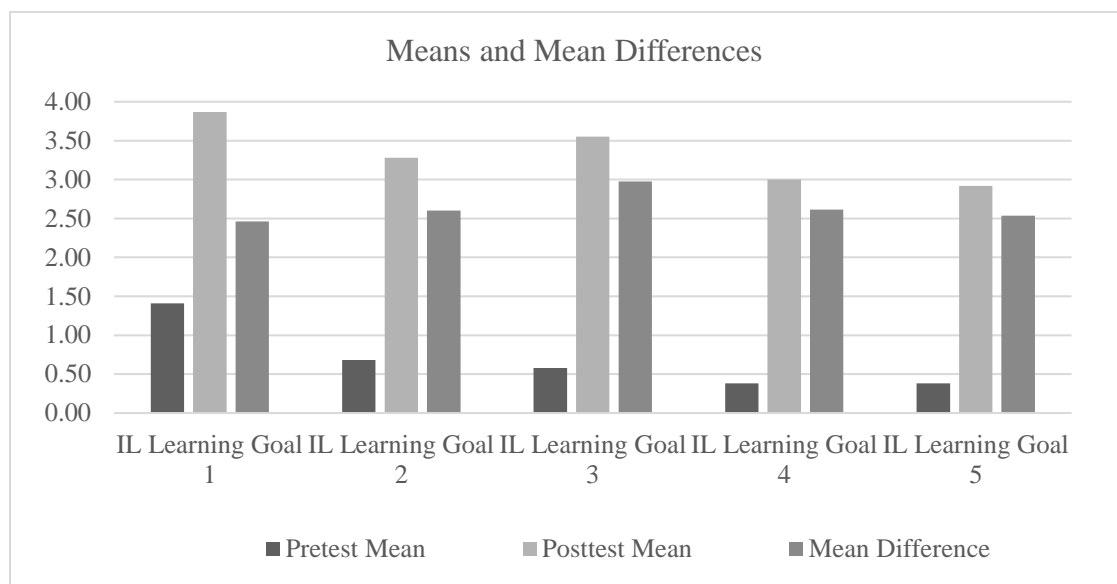
Limitations of Research Findings

The research findings have limitations. The participants do not include the entire population of rural student participants of the fall 2019 IL instruction sessions. The pre- and posttests were 24 hours apart which may reflect the students' memories rather than their understanding, although the pre- and posttests were not identical.

Summary

Data for the 78 rural students completing both UILP pre and posttests indicate significant results. The means on the UILP Pretest for each learning goal indicates exceptionally low IL knowledge and skills before completion of the IL program (see Figure 4).

Figure 4

Results for Research Subquestions 1-5

The UILP Pretest mean for Learning Goal 1 was the highest at 1.41, which is lower than the satisfactory 2.0. As aligned with Kuhlthau ISP (1991) stages 1 and 2, the students have great difficulty determining the need for information and recognizing the information problem and the general topic for investigation. The UILP Pretest mean for Learning Goal 2, .68, indicates that the students had great difficulty accessing and investigating information resources, which aligns with Kuhlthau ISP (1991) Stage 3. The UILP Pretest means for Learning Goal 3, .58, indicates that students had great difficulty using information effectively to formulate a focus for the needed information, which aligns with Kuhlthau ISP (1991) Stage 4. The UILP Pretest means for Learning Goal 4, .38, indicates that students had great difficulty gathering and using information resources effectively for a specific purpose, aligning with Kuhlthau ISP (1991) Stage 5.

The UILP Pretest means for Learning Goal 5, .38, indicates that students had great difficulty using and presenting information ethically and legally, which aligns with Kuhlthau ISP (1991) Stage 6. The results align with existing research that the underserved rural population suffers from the digital divide in which they lack IL knowledge and skills due to a lack in access to technology and associated information resources (Buzzetto-Hollywood et al., 2018; Nelson, 2016; Yasmin & Stephen, 2019; Yu et al., 2017).

The UILP Posttest paired samples statistics indicate significant improvements in the rural students' IL knowledge and skills. The lowest mean is for Learning Goal 5, 2.92, which is above the satisfactory 2.0 (see Table 5). The Cohen's d for each of the learning goal pairs indicates extra-large effect sizes, with the lowest effect being for Learning Goal Pair 1, $d = 1.385$, nearly twice the .8 large effect size. The Cohen's d for Learning Goal Pairs 1 through 4 were more than twice the .8 large effect size. The effect sizes for each of the learning goal pairs indicate that the IL program instruction had a profound effect on rural student IL knowledge and skills. The t values for each learning goal pair indicate that means were multiples of standard deviations away from the mean (see Table 5). The lowest t value was for Learning Goal Pair 1, 12.228, which is more than six standard deviations away from the mean.

The descriptive and paired samples statistics provide useful information when considering possibilities for positive social change. The UILP Pretest means indicate that beginning first-year rural students have unsatisfactory IL knowledge and skills. The UILP Posttest means indicate that the same students significantly improved their IL knowledge

and skills following participation in the IL program. The study's results describes its effectiveness at equipping rural students who are considered to be underprepared compared to their urban counterparts.

The data collection process uncovered weaknesses in SRU's assessment and IL instruction efforts. The weaknesses became apparent when reviewing the discrepancies in the total number of SRU's beginning first-year students, the total number of IL program participants for each of the sessions, and the total number of UILP Pre- and Posttests completed during the fall 2019 semester. There was a total of 833 first-year students, accord to SRU's 2020 fact book. The IL program instructors recorded 707 participants in the first session and 684 participants in the second session. There were 783 students who completed the UILP Pretest and 677 who completed the UILP Posttest. The total number of beginning first-year students compared with the total number of student participants for each of the IL program sessions indicates only 84.8% of first-year students participated in the first IL program session and 82.1% in the second session. Of the 707 students who participated in the first IL program session, there were 783 students who completed the UILP Pretest, which indicates that students completed the assessment without having actually attended the first workshop and learned about the assessment from classmates who did attend. Of the 684 students who participated in the second IL program session, only 677 completed the UILP Posttest which indicates some students decided to skip the assessment following instruction.

Of beginning first-year students, 15.1% did not participate in the IL program. There were 10.7% who completed the UILP Pretest who did not attend the IL program

first session, and 9.8% of second session IL program participants who did not complete the UILP Posttest. The discovery of these discrepancies led an investigation of SRU's policy for beginning first-year students' obligation to complete the IL program as a requirement. No policy such policy exists. Beginning first-year students are not required to complete the IL program or the UILP assessments nor are they tracked if they deliver a poor performance on the UILP Posttest. These findings indicate the need for SRU to establish an IL policy and associated procedures.

Section 3: The Project

Introduction

In this study, the problem I addressed was the lack of university assessment of its first-year rural students in terms of meeting the school's IL learning goals. The project derives from the research findings that indicate SRU's IL program as being effective. In Section 3, I provide information about the selection of a policy paper that proposes policy recommendations to SRU's administration. I include a description of the project and its goals, a literature review, and the study's research findings addressing the need for the project. I describe the particulars of the project's implementation and evaluation plan. I also include a discussion of the project study's implications for IL personnel at the local, state, and national levels as well as social change implications.

Project Description and Goals

The project is grounded in transformational leadership theory which is can be used to transform organizations. Transformational leadership was first named by J. V. Downton in 1973 and whose work was built upon by B. M. Bass in the late 1990s (Northouse, 2016). According to transformational leadership theory, organizational leadership helps the organization's stakeholders through transformation by performing 10 essential roles:

1. Help people become aware
2. Help people see beyond their own interests
3. Help people find fulfillment
4. Help people understand change and the need for it

5. Help managers and other mid-level supervisors understand the urgency for change
6. Help stakeholders realize the need for greatness in individuals and the organization
7. Help stakeholders seek broad long-term perspectives for the organization
8. Help build trust amongst the stakeholders
9. Help guide proactive thinking and approaches
10. Help stakeholders identify and target areas where change is needed most (DuBrin, 2016).

Transformational theory was used to guide the project because SRU does not have any policy requiring that students attend IL instruction. SRU's stakeholders need transformation to identify the need for first-year students to receive instruction and follow-up support to be academically, professionally, and socially prepared to handle information problems in their lives. The policy will have its foundation set on the 10 transformational roles to help SRU's stakeholders recognize the role of IL knowledge and skills in students' lives and guide the organization through the change process.

Project Description

The project is for a policy recommendation paper recommending the SRU administration adopt a requirement for beginning freshmen students to complete the IL program and the UILP assessments. The policy proposal paper includes a component to promote communications about IL instruction and assessment. I will deliver it to the SRU administration to assist them in making informed decisions. A change in assessment practices or academic requirements will not occur at the university unless SRU's

administration implements a policy with IL program participation and assessment requirements. The policy proposal consists of an introduction, the problem section describing the background information concerning the assessment gap, and lack of policy about IL program participation. The policy proposal will be built upon the foundational concepts of transformational theory, include a literature review highlighting key findings in IL assessment models and student participation, data collection and analysis results, recommendations for practice and future research, conclusion, and references.

Project Goals

The project's policy recommendation paper has three goals. The project will communicate to SRU's administrators (a) the background of the university's IL learning goals and assessment gap problem, (b) provide recommendations to improve student learning, and (c) propose an initiative for the faculty stakeholders to communicate their interests in terms of improving IL instruction at the university and producing positive social change.

Currently, there is no policy that beginning first-year students participate in the IL program or complete assessments that determine their IL knowledge and skills as adequate to begin college-level work. SRU's lack of policy leaves the school unable to accurately measure beginning freshmen students' IL knowledge and skills, which leaves the university also unable to indicate instructional effectiveness at meeting its learning goals. The policy will help the university in addressing student issues associated with IL knowledge and skills, particularly academic integrity infractions such as plagiarism.

The policy paper includes a plan for development and promotion of on-demand library guides and video tutorials addressing the content in the IL program sessions will be made available. Providing these resources will serve as review resources for students in their studies following IL program participation. The review resources will also be used to help address faculty concerns about students' preparedness in terms of upper-level course work that contributed to the study's initial problem, according to an SRU librarian. The policy paper will help ensure that students and faculty have access to the resources via the library's website.

Rationale

This study and the project are significant because an IL assessment gap exists at the university level. The study's data collection process uncovered many first-year students who did not complete both sessions of SRU's IL program. An IL instruction gap also exists. Faculty report that students are not adequately prepared for course work at upper levels, according to an SRU librarian. I chose a policy recommendation paper as the appropriate project because of the project's focus on IL knowledge and skills of rural students. Yu et al. (2017) recognized rural students as having less access to information and technology than their urban counterparts. Nelson (2016) identified rural students as being less prepared for the academic rigor of college-level work. The study produced data and results indicating a highly effective IL program with rural students. It is presumed that the IL program will benefit first-year students who come from urban backgrounds with greater access to information and technology resources (Nelson, 2016). Despite coming from various backgrounds, first-year students lack information evaluation skills,

struggle to use search tools effectively, and are uncertain of how to locate and use scholarly and peer-reviewed resources effectively (Carlozzi, 2018; Lenker, 2017; Lowe et al., 2018). A policy change requires administrative support to be effective (Christensen, Dyrstad, & Innstrand, 2020; Fisch, 2017; Galea et al., 2015). A policy paper recommending a policy for SRU's first-year students to complete the IL program will address (a) the university's IL assessment gaps, (b) ensure that students meet the school's IL learning goals required in coursework, and will recommend (c) a line of communication for faculty and other interested stakeholders in improving IL instruction and assessment practices, which will result in positive social change.

Policy papers have continued to increase in popularity in support by education decision-makers developing policies. Policy papers continue to increase in providing references and other evidence to inform policymakers (Steiner-Khamsi, Karseth, & Baek, 2020). Steiner-Khamsi et al. (2020) described how policy papers support local initiatives and open communications that share new perspectives internationally. Shannon (2019) described the policy papers' role in invoking critical discourse to promote lifelong learning and fight educational inequality. Shannon highlighted how policy papers are critical in providing data and accountability necessary for evidence-based policymaking. SRU's academic policies are derived through presentations of policy papers discussed formally by university's policymakers. SRU successfully functions by operating from key governing policies, recorded in several formats, including the university's handbooks and catalogs. The SRU faculty handbook defines academic policies as being required to be presented through documentation to SRU's standing committees, who must

recommend policies and policy changes to SRU's administrative officers, who must recommend policies and policy changes to SRU's board of trustees for final approval. The project's policy paper is necessary to implement any policy proposal at SRU.

The policy proposal's addition of follow up review resources in online library guides and tutorial formats is necessary to help students following IL program participation. Some students may need the review immediately if they have trouble with the IL program content, and they can use the review during future course work when refreshers are needed. Altman and Prange (2015) identified the importance of online finding aids and similar resources in helping students locate resources within library collections. Chen (2019) recognized the importance of online visual library tools to help students locate and use resources, particularly library guides. Canuel, MacKenzie, Senior, and Torabi (2017) described the importance of providing online library support tools in the digital age and the need to promote the resources to help students be aware of their availability for use. Logan (2019) identified most students as using online help pages and research guides to locate resources. Librarians need to promote their library resources and services to help online students become aware and promote the use of libraries (Bonella, Pitts, & Coleman, 2017). The project's inclusion of a plan for development and promotion of review resources will help students acquire IL knowledge and skills, particularly during semesters following IL program participation when students are reported as lacking IL knowledge and skills and could use IL refreshers.

Review of the Literature

I conducted a review of the literature through Walden's research databases and digital libraries. I focused on professional literature for university and higher education change and policy recommendations, use of evidence to support information literacy, the use and promotion of micro-credentials, and the use of online library guides and tutorials for supporting student IL knowledge and skills. I used the following keywords: *higher education, leadership, change, institutional change, learning goal, curriculum changes, organizational change, leadership styles, leadership theory, communications, organizational communications, institutional communications, organizational structure, university structure, information literacy, information literacy support, librarian support, credentials, micro-credentials, library badges, digital badges, instructional support, library support, library guides, video tutorials, information literacy, retention, policy, institutional policy, higher education policy, administration, higher education administration, stakeholders, higher education stakeholders, institutional stakeholders, and stakeholder communications*. Searches were conducted using the Walden library databases, Academic Search Complete, Education Source, ERIC, Computers & Applied Sciences Complete, Library, Information Science & Technology Abstracts, OpenDissertations, APA PsycArticles, APA PsycBooks, SocINDEX with Full Text, SAGE Journals, ScienceDirect, Taylor and Francis Online, ScholarWorks, ProQuest Dissertations & Theses Global, and Dissertations & Theses @ Walden University. The topics are arranged in the secondary and higher education context where first-year college students transition from high school to university level study. I arranged the current

research on the study's problem into four major themes: the higher education policy development process and use of evidence to support IL instruction, the role of stakeholder communications in policy development, the use of online library instruction and research support in the form of guides and tutorials to provide IL instruction, research assistance, and follow-up to college students, and the use of micro-credentials to prepare students to meet academic expectations.

Theoretical Justification of a Policy Recommendation Paper

The project's policy paper is needed to promote positive changes to SRU's IL program and learning goals. The policy recommendation paper aligns with current theories about higher education policies, particularly organizational change, policy development, and student learning promotion. Policy papers are used to promote positive adult education changes at both national and institutional levels (Nehring & Szczesiul, 2015; Shannon, 2019). The policy paper is expected to trigger administrative policy changes that influence positive changes for faculty, students, and stakeholders outside the university. The policy paper utilizes transformational leadership theory, which has been proven effective in promoting organizational change (DuBrin, 2016; Northouse, 2016). Christensen et al. (2020) described how administrative policy depicts the university's values, motivating faculty to act. Ellegood, Bracy, Duncan, and Burns (2019) recognized the positive and negative influence that administrative policies can have on college students' academic performances. Stakeholders, including outside of the institution, play roles in initiating institutional changes in academic programming (Fisch, 2017). The policy paper will lead to more resources for struggling students and better-prepared SRU

graduates. Fisch (2017) recognized that policy and subsequent program changes have implications for student academic and professional success. School policies can influence student IL learning. School IL policies are used to promote student learning, particularly with struggling students (Alsalem & Doush, 2018; Harper, 2017; Smythe & Breshears, 2017). A policy paper aligns with the need to promote the needed change in higher education settings, particularly the inclusion of evidence in both policy development and evaluation of policy effectiveness.

Use of Evidence in Policy Development

The policy paper uses the study's evidence to support the policy's initiatives. Evidence plays an essential role in instigating and informing policy development. Evidence at lower levels informs decision-makers at upper levels, particularly in bureaucratic systems (Steiner-Khamisi et al., 2019). The policy paper includes the study's findings of SRU students, which can provide essential information to university stakeholders about the IL problems being addressed. Evidence helps inform school stakeholders of information about problems that policies aim to address (Steiner-Khamisi et al., 2019). Evidence can provide information used to structure and promote curriculum changes that produce positive academic and social changes in student learning outcomes (Galea et al., 2015). The project's policy paper includes an evidence component to support its recommendations and follow-up evaluation of policy effectiveness.

The Importance of Stakeholder Communications in Policy Development

Policies are implemented effectively by administrators and faculty who use open channels of communication. Higher education organizations need to have open

communication, including feedback from faculty and student assessment data to address problems and successes in implementing policy changes (Galea et al., 2015). The policy paper includes a communication element to promote better communications amongst each stakeholder group about IL issues. These communications are critical for stakeholders in building relationships and developing buy-in and support. Administrative support and faculty engagement have a positive relationship, and academic changes require resources that come from administrative support based on policies (Christensen et al., 2020). Christensen et al. (2020) described how support and group cohesion are strongly associated with productivity in implementing policy changes. Crowe, Pemberton, and Yeager (2019) recognized the importance of IL instruction and support to include faculty-librarian communications to promote student learning and success. Barbrow, Lubkowski, Ludovissy, Moazeni, and Storz (2020) described the need for librarians to work with freshmen cohorts to improve communications about students' IL needs and IL instruction. Stakeholders outside of higher education institutions need opportunities to provide input, including when students engage in service-learning activities since these stakeholders can guide students preparing for employment (Fang, 2016). The project's policy paper includes a recommendation for a communication channel between faculty, students, and administrators. The policy's communication channel component includes provisions to allow for the IL program faculty to coordinate with the first-year student course instructor to prepare students for the IL workshops as well as follow up correspondence concerning students' performances.

Online Library Instruction and Research Supports

Student academic success requires learners to focus on academic preparation and instruction, and follow-up learning support. The policy paper includes a proposal for online IL instruction and support resources to help students further their IL knowledge and skills throughout their degree programs. Educators who provide on-going instruction and learning support throughout the undergraduate experience find that students gain more knowledge and skills and perform at higher levels, particularly in critical thinking (Ralston & Bays, 2015). The policy's proposed online instruction, guides, and video tutorials will target students at novice to advanced research levels of IL knowledge and skills and provide follow-up to the IL program's first-year student instruction. Green (2018) recognized the importance of educators working with novice students during their critical need experiences, such as assignments that require academic research and writing. Follow-up IL support includes promoting access to librarian-led IL instruction and research support in freshmen-level courses (Scrivener, 2019). The proposed IL online guides and video tutorials will be mobile-friendly and available to students 24 hours a day. IL instruction and follow-up efforts are being extended to online and mobile formats to support the modern 21st Century learning environment demands. Levitan and Rosenstein (2019) identified effective methods of providing first-year IL student support by providing online and mobile learning opportunities as part of their first-year student IL orientation. Librarians recognize that online and mobile learning is extended by the implementation of library-related applications, or apps (Canuel et al., 2017). The proposed guides and video tutorials will be developed by SRU librarians familiar with the

students' learning needs. These forms of online learning use librarian-developed library guides, sometimes called lib guides. Library guides are marketing tools that incorporate visualizations to help students become aware, locate, and use resources (Bonella et al., 2017; Chen, 2019). Library guides can include interactive components that allow students to engage in learning in the virtual environment (Tsichouridis, Vavougiou, Batsila, & Ioannidis, 2019). Libraries providing library guides allow students to receive IL instruction and support when librarians are not available, particularly overnight when college students complete research and other academic assignments (Blakely & Mobley, 2019). These resources will provide follow-up supports in online and mobile formats available 24-hours a day to help meet students' IL needs as they arise.

The Use of Micro-Credentials, Badges, and Digital Badges in IL Instruction

Many higher education institutions use IL instruction to promote students earning micro-credentials, sometimes called badges or digital badges, which track the meeting of educational milestones. Micro-credentials appear on transcripts, resumes, and vitae. They are badges and digital badges, which are graphic visual representations that serve as the modern form of certificates of micro-credentials. Badges and digital badges can appear on social media outlets, such as the students' online professional profiles on employment websites like LinkedIn or Indeed. Micro-credentialing is a way for universities to keep records and acknowledge students for achieving knowledge or skills (Mallon, 2019). SRU's IL program instructors will record and report students' successful completion of the program and the earning of the micro-credentials and digital badges. SRU's adoption of the policy paper's proposal can lead to further micro-credentialing for students who

complete advance levels of IL instruction. Advance level of IL instruction includes completing upper-level library instruction, guides, video tutorials, and follow-up assessments that demonstrate content and skill accomplishments. Librarians develop digital badges/micro-credential programs to promote student learning of needed IL knowledge and skills, which provide measures of student IL achievement (Rimland & Raish, 2017). Rodgers and Puterbaugh (2017) identified success in implementing digital badges to promote, educate, and assess IL knowledge and skills with first-year students. Smith (2016) found the systematic implementation of instruction and IL digital badges promoted student success at all undergraduate levels and was positively received by faculty as preparing students with necessary academic skills. Students may earn digital badges online for completed IL instruction (Ziegler, 2019b). Badge programs can focus on specific skills, including specific subjects, disciplines, and professions, to prepare students for advanced performance (Behney, 2019; Virkus, Aparac-Jelušić, & Kurbanoglu, 2019). Badges and micro-credentials serve many purposes for students, including marketing student knowledge and skills to their instructors and classmates as meeting educational milestones (LaMagna, 2017; Mallon, 2019). Students may also display their micro-credentials through social media outlets, such as work-related documents like resumes in which students are more desirable to potential employers (Copenhaver & Pritchard, 2017; Jones-Schenk, 2018; Mallon, 2019; Raish & Rimland, 2016; Sharma, 2016). The policy recommendation's inclusion of micro-credential will help SRU assess, track, acknowledge, and promote student IL knowledge and skills.

Project Description

Policy Recommendation Paper

The policy recommendation paper's aims to promote positive change for college students' academic success and lifelong learning. The proposed policy requires first-year students to complete the IL program in regular required first-year orientation course class sessions. The IL program goals are to equip first-year students with basic IL knowledge and skills to be used in their academic pursuits and prepare them for lifelong learning.

Students continue their IL studies during the remainder of the students' undergraduate education by participating in IL instruction sessions at two more checkpoints. During the second IL instruction session checkpoint, students participate in a focused IL lesson. They learn and practice advanced IL knowledge and skills that build upon IL knowledge and skill learned during the IL program's instruction for first-year students. The goals of the second IL instruction checkpoint are intended to support scholarly research and writing. The second session checkpoint follows the initial IL program participation for first-year students, and their composition instructors assess the students' IL knowledge and skills.

During the third IL instruction session checkpoint, students participate in a discipline or profession-focused IL lesson. They learn and practice advanced IL knowledge and skills intended to support their performance in their chosen discipline or profession. The third IL session follows the second session checkpoint that focused on scholarly research and writing. The third IL session builds upon the second IL checkpoint and typically occurs during the students' junior or senior year when they take classes

focusing on their specific majors. Discipline/profession-specific faculty initiate the third IL session checkpoint, have students participate in IL instruction, and assess the students for their IL knowledge and skills as required by the standards for the specific discipline/profession and SRU's IL learning goals. The assessment of the SRU learning goals at the third checkpoint provides indicators that students have mastered IL knowledge and skills intended for navigating society and lifelong learning. The discipline/profession-specific assessment provides indicators that students have mastered IL knowledge and skills intended to navigate and continue development as professional scholars or practitioners.

Necessary Resources and Support

SRU has most, if not all, the necessary resources in place. The current IL program instructors collect IL assessment data for first-year students and can award micro-credentials to students who successfully complete the IL program. SRU has all the necessary technology and systems to implement the policy recommendations, including a credit-tracking system and an organizational communication system for administration, faculty, students, and outside stakeholders. The university's IL goals align with the existing ACRL (2000) IL standards used throughout higher education institutions in the United States.

Potential Barriers

As with many initiatives, potential problems are expected. The policy recommendation could potentially meet resistance at the library committee, academic affairs committee, or the SRU Administration. However, stakeholder resistance is not

necessarily unwelcome. As Simard and Karsenti (2016) note, there are various reasons that people resist the adoption of IL training or related initiatives, including a lack of awareness of IL knowledge and skills and whether the individuals are digital natives or not. SRU's library and academic affairs committee members represent the school's stakeholder groups who may not understand the IL policy proposal or may recognize the need for amendments before moving the proposal to the next level. The proposal will address potential barriers. The proposal includes background information and data from the IL program study as evidence to help educate stakeholders of the university's IL problem and draw support of the proposed policy recommendation solution. Additionally, any resistance from the library or academic affairs committees could be due to members' insights with their stakeholder groups, and in such cases, lead to further improvements to the policy recommendation. Rather than consider policy proposal alterations as resistance, it is essential to recognize them as stakeholder buy-in and allow committee members to take ownership of the policy proposal and any improvements made.

Implementation and Timeline

SRU's implementation of the policy recommendation would begin by being introduced to the university's library committee in charge of communicating policies faculty, student, and outside stakeholder recommendations to/from the university community concerning policies for library services and uses, according to SRU's bylaws. Once the library committee approves the proposed policy recommendation, the recommendation will be presented to the school's academic affairs committee, who is charged with recommending, proposing, and approving policies involving curricula,

academic standards, transfer credits, and special offerings. Once the academic affairs committee approves the proposed policy recommendation, the policy will go into effect of the following school year.

Roles and Responsibilities

Once the proposed policy is in place, the IL program instructors will continue keeping participant assessment data and begin awarding micro-credentials to the next first-year student cohort participating in the program. The IL program instructors will prepare necessary IL library guides and related follow-up resources to provide refresher support. The IL program instructors will maintain micro-credential records along with their existing attendance records. The SRU librarians will maintain the library guides and other follow-up resources in conjunction with the library's other library guides. The SRU librarians will begin preparing reports each school year that are included with the library's annual report. The library's annual report is delivered to the SRU administration, and feedback is provided for any necessary changes at the end of each school year.

The library committee will begin including IL communications in its work with stakeholders. The committee members represent each of the university's stakeholder groups, including faculty, student, librarian, and outside stakeholders. While the committee has focused primarily on providing library materials to the SRU community, it will begin focusing on IL instruction and support needs, including any further recommendations for the IL program's instruction for first-year students. The library

committee prepares an annual report that is delivered to the SRU administration and feedback is provided for any necessary changes at the end of each school year.

Project Evaluation Plan

The IL policy recommendation's primary goal is to improve student IL knowledge and skills needed for academic and professional success and global citizenship. The policy's recommendation to require all first-year students to complete the IL program will largely be evaluated by the IL program instructors who record attendance, assess student learning, and provide follow-up with students. The project evaluation will be recognized as a success with the adopting of an IL program participation requirement for first-year students.

SRU's IL program instructors and fellow librarians recognize the need to improve follow-up IL instruction and support resources for first-year students and have begun work on their development and delivery. The IL program and SRU librarians track their IL instruction attendance, resource usage, and library guide and support material usage as part of their on-going assessment. The IL program instructors plan to begin tracking pass/fail rates of student participants and follow-up interventions beginning in the fall of 2020 semester. These initiatives are considered a success credited to the IL policy recommendation efforts.

The policy proposal to the SRU library committee is expected to initiate conversations about IL and the association instruction and support efforts. The library committee is expected to continue these efforts as part of its oversight of library policies concerning the library's services and uses. The committee's inclusion of IL as a

reoccurring agenda item will be considered a success credited to the IL policy recommendation efforts.

Project Implications

Implications at the Local Level

The IL policy proposal has and is expected to increase conversations at SRU about IL instruction and support. Students, faculty, administration, librarian, and outside stakeholder groups are expected to benefit in the local context. Students who participate in IL instruction will be better prepared to meet academic challenges by having more IL knowledge and skills (Rosenzweig, Thill, & Lambert, 2019). Faculty will benefit from having students with more IL knowledge and skills to allow them more instruction time to focus on their courses' other content areas. SRU's administration will have more student data to indicate the school's impact on student learning for its IL learning goals, including the closing of an IL assessment gap. The IL program instructional librarians will receive more administrative support to aid in preparing and supporting students with IL instruction and follow-up resources. SRU graduates will be better equipped for their graduate studies and workplaces, which will improve work performance and productivity for their future graduate faculty and employers in the local community.

Implications in the Larger Context

The IL policy proposal will lead to students with better IL knowledge and skills necessary to navigate a world of misinformation as global citizens. Fielding (2019) recognized that IL knowledge and skills are critical to confronting daily issues, particularly in a world with a surplus of fake news and other misleading information. The

IL policy proposal will lead the SRU community to be more IL literate, which will produce a positive social change in society.

Summary

A detailed overview of the project study is provided in Section 3. The IL policy recommendation paper is the most appropriate deliverable for the project. The professional literature provides the needed support for a policy recommendation and includes considerations for each SRU stakeholder group. The policy paper aligns with SRU's learning goals and mission to prepare its students for academic and professional success and global citizens. SRU has the resources and associate personnel in place to successfully implement the policy recommendations. While there is a potential for possible resistance to the policy, the resistance can be used to gain stakeholder support and policy improvements that produce better IL literate students and graduates.

In Section 4, I explain knowledge and skills I have gained during the project study experience. I describe the improvements made at SRU as well as anticipated enhancements to the university and its stakeholders. I explain the limitations of the study and offer recommendations for further work. Finally, I offer my perspectives regarding the study's contributions and project to the local and global communities.

Section 4: Reflections and Conclusions

Project Strengths and Limitations

I am thankful that SRU allowed me to study their IL program and rural student assessments. SRU was generous in providing me with their archived fall 2019 IL program for first-year rural student assessment data. The provided data allowed me to study and conduct analysis that indicated a highly effective IL program. While sharing the study results with SRU stakeholders could improve IL program participation, the policy paper can also communicate the IL program's effectiveness, the gaps in practice, and opportunities for improvement with the implementation of a new policy. The university has the resources to support the policy recommendations, but the SRU stakeholders need to be informed and receive support at the administration level.

Project Strengths

The project and preceding study are critical for addressing a gap in practice for SRU. While the data collected from IL program's archive data returned fewer cases than expected, the data set met the statistical analysis requirements. SRU's first-year rural students face similar IL challenges as other rural students beginning their college studies (Buzzetto-Hollywood et al., 2018; Yu et al., 2017). Fortunately, SRU's IL program for first-year students is highly effective at preparing the rural participants for meeting the university's IL learning goals. Rural students often face a digital divide and lack support for their higher education supports which results in low levels of IL knowledge and skills (Buzzetto-Hollywood et al., 2018; Hlinka, 2017; Yu et al., 2017). The study's pretest mean confirmed SRU rural students' lack of IL knowledge and skills described in the

professional literature. The IL program helps prepare students with IL knowledge and skills necessary for academic success (Reading, 2016) employment and other real-world applications (Roberts, 2017). I was fortunate to work with IL program instructors to identify problems regarding the attendance discrepancies I noticed in the IL program archived data. Their provided background information helped me in determining the need for new IL policy at SRU. The policy paper aligns with SRU's administrative structure and is a logical way to inform stakeholders of evidence and existing research to develop and implement policy that brings positive organizational change (Galea et al., 2015; Steiner-Khamsi et al., 2019).

I based my policy recommendations on evidence collected through the study, research publications concerning best practices, and the identified gaps in practice. The policy recommendations were prepared to address SRU's stakeholders using easily understood and jargon-free language. Since the data were collected recently on SRU students, it can better represent current students and their IL needs to inform stakeholders during the policy proposal process. I targeted policy recommendations that improve student IL knowledge and skills.

Project Limitations

The most prevalent limitation of the project and the preceding study is the transferability to the broader and more diverse population of first-year college students. This limitation is due to the study's focus on rural students and not both urban and rural students. However, rural students have more challenges in terms of their backgrounds and less support for their academic studies than their urban counterparts (Hlinka, 2017;

Nelson, 2016). Therefore, the IL program being highly effective ($d = 2.20$) at preparing rural students with IL knowledge and skills is expected to be effective with their urban counterparts. Further research is needed to study the IL program's effectiveness for urban students. However, the project recommendations can remain the same.

Recommendations for Alternative Approaches

The policy paper recommendations could easily be implemented and supported using existing SRU resources. However, if the study revealed that the IL program was wholly ineffective or only partially effective, IL program instructor training would be a better project focus. For example, the study indicated that students' post mean scores were remarkably high at 3.0 or higher for each IL learning goal (see Table 5). However, if the mean score for any IL learning goal was 2.0 or below, it would indicate that students did not have adequate IL knowledge and skills, and further development was needed. The IL program faculty would need training to identify curriculum, instruction design, and delivery problems to address deficiencies in their teaching practices. My study focused on first-year rural students IL knowledge and skills. The focus was not on student retention beyond the two day workshop. SRU faculty complaints about upper-level students being underprepared with sufficient IL knowledge and skills could instigate the need to future study of student retention of first-year IL program knowledge and skills. Likewise, alternate methods of IL program delivery could be explored besides the two-session format currently being used. The study's results indicate that the IL program effectively prepares students with IL knowledge and skills, so no change in teaching practices is necessary. Instead, the study uncovered discrepancies in terms of the

number of program participants compared to the number of first-year students enrolled at SRU, which indicated that not all students were attending and successfully completing the IL program. The project found that SRU has no policy requiring first-year students to attend the IL program or follow-up support for students who attended but were unsuccessful. Therefore, I determined that a policy recommendation paper would be the best option to help SRU support student learning and academic success.

Scholarship, Project Development and Evaluation, and Leadership and Change Scholarship

I chose Walden University's Doctorate of Education program because it allowed me to become a leader, researcher, and practitioner in my focus area of IL programs and the associated day-to-day IL problems within higher education institutions. Since the beginning and throughout my time in the Walden program, I have focused my research and development on IL programs, including administration, assessment, curriculum, teaching, and new trends and developments. Through the Walden coursework and interactions with professors and classmates, my studies have caused me to question my knowledge, skills, and abilities as an educator. More importantly, my Walden experiences have caused me to make refinements in my research, teaching, and leadership practices and led to a desire to continuously seek improvements in myself as a scholar-practitioner to help my students.

Project Development and Evaluation

I began the development of the project and preceding study with a unique and personal perspective. However, as I began to studying higher education and

organizational change processes, I recognized the importance of staying objective and being open to new ideas. As I began reviewing peer-reviewed publications about institutional change and IL program management, I realized the advantage of using other professionals' experiences when developing a policy to promote positive change for SRU and its stakeholders.

I used current professional and peer-reviewed literature to guide me during project development. As I read, I identified similarities and differences between higher education institutions that influenced my decision to choose a policy paper project and the included recommendations. Colleges and universities have institutional hierarchies and systematic communications to help ensure governance and communications between their stakeholders. While these institutional components can be problematic to many, they provide continuous improvement opportunities that lead to positive changes. I developed my first significant understanding of higher education structure, which is the need to understand its construction. While colleges and universities vary in the construction of their organizational and bureaucratic systems, I began to realize the need to understand how these systems are designed to identify how to use them to promote positive change. My second significant personal discovery of higher education systems was more focused and dealt with the connections of IL knowledge and skills to student success and IL program performance to education institutional success.

The project's policy paper will be successful if it produces positive institutional changes and promotes student learning. I will consider the project successful with SRU's adoption of policy recommendations. However, I recognize the critical role that

university stakeholders play in improving student learning. I realize that it will take members from all organizational structure levels to produce systematic changes, from upper administration to students. Communication amongst all stakeholders is critical. Stakeholders need to communicate their needs to each other and work together to make necessary changes that meet their collective needs. The project's policy paper includes recommendations to encourage and support stakeholder communications.

Leadership and Change

Leaders do not have to be organization administrators to cause change. While administrators can promote change, they play a more important role in providing support and structure that allows others to make change possible. Each group of organizational stakeholders needs to be able to communicate at all levels. The communications are necessary to understand the needed changes and their organization's structure and change process. All stakeholder levels need to communicate their concerns as a precursor to developing fellow stakeholder buy-in and support for change. Leaders are stakeholders who take the initiative and communicate their initiatives to others to promote change. Leaders exist at all higher education organizational levels ranging from upper administrators to classroom teachers. These individuals become leaders when they recognize problems affecting the organization and choose to communicate their needs to other stakeholders. Leaders use evidence-based research and instigate changes to resolve organizational problems. Organizational change is only possible with effective leadership communications.

Reflection on Importance of the Work

People work to resolve information problems each day. Kuhlthau (1991) recognized that students proceed through Information Search Process stages to resolve information problems. However, students vary in their background experiences and have different IL knowledge and skill levels that can lead to them getting stuck in one of Kuhlthau's IL problem-solving stages. Educators need to be equipped with IL knowledge and skills and be prepared to teach students how to effectively navigate each stage of the information-seeking process to resolve information problems. Like the beginning stage of Kuhlthau's (1991) ISP theory, people may not recognize there is an information problem. Educational institutions need to understand their students' IL needs, including their lack of knowledge about problems relating to IL, and provide instruction and support to meet their diverse needs. The study and project provide information to help educational institutions understand more about students' IL needs and ways to improve practice to better meet these needs. The study provides research about rural students' IL knowledge and skills to answer SRU's questions about the IL program's effectiveness. The project provides guidance for addressing the problems discovered at SRU to improve the university's overall effectiveness. Together, the study and project provide information to improve rural student learning of IL knowledge and skills necessary for academic and professional success and global citizenship.

Implications, Applications, and Directions for Future Research

Implications

Students need IL instruction and support (Fielding, 2019). However, Sterling et al. (2017) recognized that little distinction had been made in professional literature about rural versus urban student IL needs. According to the United States Census Bureau (2017), 19.3% of the population is rural. This study aimed to help address the gap in the professional literature that serves the broader societal needs for research about rural students' IL knowledge and skills.

SRU was uncertain of its effectiveness at preparing first-year rural students to meet the university's IL learning goals, which was identified as a gap in assessment practices. Librarians have a history of problems in measuring their effectiveness at meeting students' needs, particularly with library IL instruction (Barefoot, 2017; Savage et al., 2017; Wegener, 2018). The project aimed to help address the gap in SRU's administrative assessment practices to equip first-year students with necessary IL knowledge and skills effectively.

Applications

Kuhlthau's (1991) ISP stages address students IL knowledge and skills needs in solving information problems. SRU having information about incoming first-year rural students' IL knowledge and skills will help the university improve its IL instruction and support. Other IL professionals can use the study's findings and project's policy recommendations to guide their efforts to improve student learning.

Direction for Future Research

The study produced data about rural first-year student IL knowledge and skills and SRU IL program's effectiveness at preparing students for the university's IL learning goals. SRU could have a collective mean for both rural and urban students, but my study focused specifically on rural students. My work focused on changes based on an administrative nature. However, future research could focus on measuring program effectiveness for both rural and urban students because urban students may not have improved and their mean may not have significantly changed. Future work could focus on student retention of IL knowledge and skills in time analysis in the semesters or years following participation in the IL program for first-year students. Future research could include focus on student retention should video tutorials be incorporated into the IL program's follow-up support.

Conclusion

This project study began with SRU not knowing effects the university's IL program has on incoming rural first-year students' IL knowledge and skills. I used the knowledge and skills gained from my doctoral courses at Walden and my challenging and supportive doctoral committee to perform an exhaustive review of literature, conduct a formal research study, and prepare a scholarly evidence-based paper that answers the instigating question and provides recommendations for improvements. I will share my research findings and policy recommendations with the SRU administration to improve the university's IL communications and practices that promote student learning. Now, I have the knowledge, skills, and abilities to conduct professional research. Further, I

understand the importance of critically evaluation research studies, and question research methodologies and approaches. This capstone project concludes my studies and requirements for my Doctorate of Education. However, it marks the beginning of being a better researcher, teacher, administrator, and lifelong learner who promotes student success. Students need IL knowledge and skills to be successful in their academic and professional pursuits and as lifelong learners. The study and project provided improvements in student IL learning at SRU and a contribution to the body of literature available to the research community.

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Appendix A: The Project

Information Literacy Instruction and Support

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Executive Summary

This study focused on identifying what knowledge and skills rural students, a majority population at SRU, possessed entering the university before and after IL program participation. The study was intended to provide data about how successful the university is at preparing rural students for meeting SRU's 2018 IL learning goals. Rural students are much weaker than their urban counterparts due to a lack of access to resources, support, and experiences (Yu et al., 2017; Buzzetto-Hollywood, Wang, Elobeid, & Elobaid, 2018; Hlinka, 2017; Nelson, 2016). SRU's 2019 first-year freshmen cohort consisted of 69.23% rural students, according to SRU's 2020 fact book. SRU's recent move to focus on rural studies triggered the study and the focus on first-year rural student's IL knowledge and skills.

The study's findings indicate that rural first-year students had little IL knowledge or skills before IL program participation. However, these students indicated high levels of IL knowledge and skills following IL program participation. The study provided data indicating that the IL program is highly effective at preparing this underprepared population with superior levels of IL knowledge and skills. Unfortunately, the study also uncovered critical flaws in SRU's IL efforts. The problems included a lack of required participation in the IL program, reporting of student IL assessment data, follow-up support for students IL needs, and little communication amongst IL program instructors and SRU's internal and external stakeholders about student IL needs.

The following policy proposal includes recommendations that will allow SRU to address its IL problems. The policy will lead to the development of the necessary

organizational structures to ensure that first-year students are academically prepared with the necessary IL knowledge and skills. Further, the policy will help resolve a university IL assessment gap, supply students throughout their academic studies with supplemental IL instruction and support, and improve communications with SRU stakeholders about student IL needs.

Introduction

SRU has worked diligently to keep pace with technological changes and providing related information literacy instruction. Information literacy (IL) is a set of knowledge and skills that allow people to identify and effectively resolve information problems. IL instruction is critical for first-year students who come to college underprepared and need to transition to higher levels of academic performance required for academic study at the university level (D’Orio, 2019a; D’Orio, 2019b; Goldstein, 2019). University IL programs need to target first-year students and provide instruction and support (Peter, Leichner, Mayer, & Krampen, 2017; Folk, 2018).

SRU has focused on preparing first-year students through its freshmen seminar program taken by incoming freshmen during the first semester enrolled. College freshmen come from diverse backgrounds and often do not have adequate resources and experiences to prepare them for the higher education academic rigor or their future careers (Knight, Rienties, Littleton, Mitsui, Tempelaar, & Shah, 2017; Johnson, 2017). SRU’s freshmen seminar program has targeted learning goals for the first-year students’ needs to prepare them for their academic studies, including IL needs. First-year students struggle to identify, evaluate, and locate quality resources (Fielding, 2019; Lenker 2017).

Beginning first-year students do not understand how to navigate advanced library resources and search interfaces to conduct complex searches (Lowe, Maxson, Stone, Miller, Snajdr, & Hanna, 2018). First-year students do not understand the importance nor possess the skills to identify, locate, and use scholarly and peer-reviewed resources (Carlozzi, 2018).

SRU requires students to take an advanced composition course that includes a focus on academic writing and research. The advanced composition course incorporates IL knowledge and skills that build upon students' first-year freshmen seminar IL program instruction. SRU focuses on advanced IL knowledge and skills that focus on discipline or profession-specific requirements during students' capstone courses before graduation. During capstone course research assignments, SRU faculty assess student IL knowledge and skills for the university's learning goals and any discipline or profession-specific requirements. Employers agree that IL skills are essential for college graduate career success (Collier, 2019). IL knowledge and skills are required for academic, professional, and lifelong success (Bapte, 2019). SRU has IL learning goals that align with national and professional standards to ensure graduates have the necessary skills for success. SRU's IL program for first-year students targets freshmen seminar courses in its effort to prepare incoming students. However, participation in the program is currently voluntary.

The Problem

The problem triggering this project is a missing policy at SRU. The project responds to the study on the IL program's effectiveness at preparing rural first-year students due to a gap in assessment practices. The IL program assessment gap is met, and

the program is effective at preparing incoming rural first-year students with the university's required IL knowledge and skills. SRU's new academic focus on rural studies, prominent rural student population, and faculty complaints that students were underprepared for upper-level coursework instigated the study to focus on IL program student assessment to determine its effectiveness. The study uncovered gaps in SRU IL policy, which includes missing focuses on IL assessment, student support, and stakeholder communications. The project will result in a policy recommendation paper to address SRU's missing policy problem.

The Purpose

The project aimed to address a missing SRU IL policy by investigating the effectiveness of SRU's IL program and university organizational structure. The study provided indicators that the IL program instruction is highly effective at equipping incoming rural students with IL knowledge and skills to meet the school's IL learning goals necessary for academic, career, and lifelong learning. The study addressed a gap in professional literature about rural first-year student IL knowledge and skills (Sterling, et al., 2017). The study addressed a local concern that SRU's IL program for first-year students meets the university's rural students' needs. The project's purpose builds upon the study's findings. The project's policy paper aims to provide recommendations to address problems uncovered during the study. The policy paper's recommendations include requiring first-year students to participate in SRU's IL program for first-year students by the end of their first term, closing an assessment reporting gap, addressing a

lack of stakeholder communications about student IL needs, and providing first-year student IL follow-up support.

Methodology

Research Questions

The following research question (RQ) and subquestions (SQ) were used to guide the study:

RQ1: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills?

SQ1: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills for determining the extent of information needed?

SQ2: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills for accessing the needed information?

SQ3: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills for evaluating information and its sources critically?

SQ4: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills for using information effectively to accomplish a specific purpose?

SQ5: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills for accessing and using information ethically and legally?

Study Design

This quantitative study uses a quasi-experimental research design to study secondary pre and posttest rural student IL program assessment data. The IL program used the University Information Literacy Program (UILP) Pre and Posttests to data collected from 783 students for the pretest and 684 students for the posttest in the fall of 2019. During the collection process, IL program instructors discovered an error in the survey system's tool that caused a data loss. There were 611 UILP Pretest and 588 UILP Posttest surveys rejected due to missing IL item response data. As a result, the survey system tool only collected data for 96 students who completed both UILP tests. There were 78 rural students in the dataset. The students were representative of SRU's regional rural counties of rural students. A G*Power analysis for a two-tailed t test with a power of 0.95 and an alpha of 0.05 indicated a minimum of 54 participants.

The data review process indicated additional discrepancies. SRU had a first-year freshmen enrollment of 833 students for the fall of 2019 semester, according to SRU's 2020 fact book. The IL program instructors recorded 707 student participants for the first workshop and UILP Pretest completions and 684 student participants for the second workshop and UILP Posttest completions. An investigation of the beginning freshmen enrollment and recorded IL participants indicated that not all students participated in the IL program. Further, there were 23 less students in the second workshop, which might indicate that some students attended the first workshop but did not complete the second workshop. While the required minimum number of participants was met for the study, the

IL program does not deliver instruction or capture assessment results for all beginning freshmen.

Evidence-Informed Literature

Many students begin college underprepared. D’Orio (2019a) identified that only 25% of high school libraries have plans for preparing their students for college-level research. Incoming first-year students depend on their Google search skills, which result in retrieving resources that have not been evaluated for quality and are inaccurate (D’Orio, 2019b).

Higher education IL instruction needs to address first-year student needs. IL instructors need to consider students’ IL backgrounds and deliver lessons that focus on students’ lack of experiences. The IL instruction needs to address deficiencies and promote greater achievement at higher IL knowledge and skill levels (Peter, Leichner, Mayer & Krampen, 2017). IL instruction needs to be delivered in various formats to support student learning needs (Goldstein, 2019). IL instruction needs to be provided throughout students’ degree programs and prepare them for their careers (Johnson, 2017). First-year student needs are made more complicated when the students come from rural backgrounds.

Rural college students have unique challenges that affect their educational experiences. Rural students are likely to come from lower-income families and parents with less education (Nelson, 2016). Rural students are influenced by family members who convey little value for education (Hlinka, 2017). Parents of rural students often have limited educational experiences and do not understand the challenges college students

face and are not sure how to provide support (Hlinka, 2017). Rural students struggle with balancing the needs of family versus the needs for academic success in college (Hlinka, 2017). These rural student problems heightened due to a digital divide that includes a lack of access, experience, and education of Internet resources (Yu et al., 2017; Buzzetto-Hollywood, Wang, Elobeid, & Elobaid, 2018).

Analysis of Findings

RQ 1: What are the effects of the university's IL program on incoming rural first-year students' IL knowledge and skills?

Incoming rural students indicated minimum IL knowledge and skills prior to their IL program participation (SQ 1-5). Table 1 provides the Pre IL mean scores for each of SRU's learning goals. Each of the study's research SQs aligns with the corresponding learning goals. A mean score of 2.0 or higher indicates adequate IL knowledge and skills for beginning students, while mean scores below 2.0 provide indicators for needed IL knowledge and skill development. The study's results indicated that the first learning goal had the highest student mean score of 1.41 while learning goals 2-5 fall (SQ 2-5) below 1. Incoming rural students have some abilities in identifying information problems but have little knowledge or skills in finding solutions. The study's findings align with existing research. Many researchers argue that rural students' unique backgrounds including lack of social and economic support, the experiencing of digital divides, and lack of IL educational experiences are major influencers to a lack in IL knowledge and skills (Nelson, 2016; Hlinka, 2017; Yu et al., 2017; Buzzetto-Hollywood, Wang, Elobeid, & Elobaid, 2018). However, the study's findings align with D'Orio (2019a, 2019b) and

Peter et al. (2017) findings that incoming college freshmen, in general, are have minimum IL knowledge and skills when beginning their higher education studies.

Table 1

Learning Goal Paired Samples Descriptive Statistics

		Paired Samples Statistics			
		Mean	N	Std. Deviation	Std. Error Mean
SQ 1	Post IL LG 1	3.87	78	.466	.053
	Pre IL LG 1	1.41	78	1.694	.192
SQ 2	Post IL LG 2	3.28	78	.979	.111
	Pre IL LG 2	.68	78	1.157	.131
SQ 3	Post IL LG 3	3.55	78	.892	.101
	Pre IL LG 3	.58	78	1.134	.128
SQ 4	Post IL LG 4	3.00	78	.912	.103
	Pre IL LG 4	.38	78	.725	.082
SQ 5	Post IL LG 5	2.92	78	.964	.109
	Pre IL LG 5	.38	78	.777	.088

Incoming rural students indicated significant IL knowledge and skills following IL program participation. The table above provides the Post IL mean scores for each of SRU's learning goals. Mean scores of 2.0-3.0 indicate adequate IL knowledge and skills, while mean scores of 3.0-4.0 indicate superior IL knowledge and skills. A mean score of 4.0 indicates a perfect performance of IL knowledge and skills. The study's results indicated that rural first-year students have superior IL knowledge and skills following IL program participation (SQ 1-5). The study's findings align with existing research. Johnson (2017) recognizes that first-year IL programs have long histories of preparing incoming students with IL knowledge and skills.

The study's findings indicated the IL program's significant positive results with the rural student population. Table 2 below indicates the paired samples mean differences with the smallest difference being 2.462 for learning goal 2 (SQ 1) and the greatest difference being 2.974 for learning goal 3 (SQ 3). The findings are more significant, considering the background of the population. The rural student population has been described as academically weaker with less social and financial support than their urban counterparts (Hlinka, 2017; Nelson, 2016). Yu et al. (2017) and Buzzetto-Hollywood, Wang, Elobeid, and Elobaid (2018) describe rural students as being underequipped with IL knowledge and skills compared to their urban counterparts. The IL program's significantly higher results with rural students supports the argument that the program can also be effective with the academically more robust urban first-year students. The study's findings can be used to inform the project's policy paper recommendations.

Table 2

Learning Goal Paired Differences

		Paired Samples Test							
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
SQ 1	Post IL LG 1 - Pre IL LG 1	2.462	1.778	.201	2.061	2.862	12.228	77	.000
SQ 2	Post IL LG 2 - Pre IL LG 2	2.603	1.622	.184	2.237	2.968	14.167	77	.000
SQ 3	Post IL LG 3 - Pre IL LG 3	2.974	1.338	.152	2.673	3.276	19.626	77	.000

SQ 4	Post IL LG 4 - Pre IL LG 4	2.615	1.142	.129	2.358	2.873	20.222	77	.000
SQ 5	Post IL LG 5 - Pre IL LG 5	2.538	1.203	.136	2.267	2.810	18.640	7 7	.000

Note. $N = 78$

Best Practices

The study's findings and evidence-informed research on best practices led to identifying four recommendations that could be used to student learning at SRU. The project's recommendations provide a method for the IL program instructors, library staff, faculty, students, administrators, and outside stakeholders to improve student learning outcomes. The recommendations will promote the student learning of IL knowledge and skills needed for academic and professional success and global citizenship.

Project Recommendations

The project policy recommendations will improve student learning of IL knowledge and skills. The first policy recommendation will help ensure that all incoming first-year students participate in the IL program and receive the necessary IL knowledge and skills. The student IL program participation requirement will also help SRU address its IL assessment gap in the second policy recommendation for evidence-based practice. The third policy recommendation provides communication channels between the IL stakeholders. The fourth policy recommendation aims to provide needed follow-up support to SRU students following participation in the IL program and throughout their degree programs.

Recommendation 1

SRU has the opportunity to ensure first-year students are adequately prepared for their academic studies by requiring beginning students to complete the IL program successfully. SRU has no policy requiring first-year students to complete the IL program successfully. SRU's IL program for first-year students has proven its effectiveness in preparing incoming rural students to meet the university's IL learning goals. The study's findings indicate high student IL knowledge and skills following the successful completion of the IL program. However, the study uncovered that of the 833 first-year students enrolled at SRU, only 707 students completed the first IL program workshop. SRU's lack of policy leads to students inconsistently attending the IL program workshops and successfully gaining necessary IL knowledge and skills.

The first recommendation is to require that all first-year students successfully complete the IL program by the end of their first term. Current research indicates that rural students are weaker in their academic performances than their urban counterparts due to a lack of resources and experiences. SRU requires that students meet the university's IL learning goals, but it does not have a policy requiring students to participate in IL instruction. The recommendation will help ensure that all students are prepared for their academic studies and provide the necessary skills needed for careers and global citizenship.

Recommendation 2

SRU has an opportunity to collect and use first-year student IL assessment data to improve its assessment practices. SRU currently does not have a policy requiring

reporting of its IL program assessment data for first-year students to the university's assessment system. The study found that the IL program is highly effective at preparing academically underprepared students at meeting the SRU IL learning goals with superior knowledge and skills gains as found in pre and post mean differences (see Table 1). The IL program began collecting data on first-year students' initial IL knowledge and skills before program participation as part of its effectiveness self-study in the fall of 2019. This initial student assessment data can be used to determine students' baselines upon entering SRU studies. The IL program's baseline student data could be used to compare with other student IL knowledge and skill assessment checkpoints to determine the meeting of student milestones. These milestones represent micro-credentials on students' resumes, vitae, and other academic and employment documents and badges that may be included in the form of digital badges on students' professional social media outlets, such as online employment profiles like LinkedIn and Indeed.

The IL program's student assessment following participation in the first-year program provides SRU measures of IL instruction effectiveness and student IL knowledge and skills. These measures can be used to inform future IL instruction and support and contribute to the university's reporting of its overall effectiveness. The recommendation is for the IL program for first-year students to record and report student IL assessments to the SRU assessment system. The recommendation will help ensure that IL instruction and support resources are informed using evidence and close a university assessment gap.

Recommendation 3

SRU has an opportunity to improve communications amongst its stakeholders to prepare students better with necessary IL knowledge and skills. SRU does not have a policy that provides a systemic communication channel for stakeholders to discuss student IL needs. The study uncovered SRU administrator and faculty concerns about students not being prepared with necessary IL knowledge and skills. Yet, no university group or office oversees, addresses, or assesses these communications, concerns, or effectiveness. SRU uses standing university committees to develop and communicate its policies to university administrators, faculty, students, and outside stakeholders.

SRU has a library committee representative of the university's stakeholders with the mission to propose policies for the library's services and uses. The mission misses specifically addressing IL needs, which causes a communication failure. The recommendation is for the existing library committee to expand its mission to include communications for IL needs amongst stakeholders. The recommendation will address the IL communication gap and provide a method for stakeholders to share their IL concerns.

Recommendation 4

SRU has the opportunity to provide IL support to students throughout their degree programs. SRU has no policy that requires student IL support. The study's results included data used to determine overall IL program effectiveness, but no university system exists for individual following-up on students who did not complete the program successfully. These unsuccessful students need follow-up support that addresses IL

content needs not mastered through IL program participation. Likewise, professional literature indicates that students need IL instruction and support throughout their academic studies that target their specific IL needs.

SRU needs a policy that ensures focused IL instruction and support for students throughout their degree programs based on their specific IL needs. The SRU library provides resources and support for the university community's research needs. The librarians work with the IL program for first-year students to provide support. However, until project study was conducted, evidence from SRU's population had not been used to guide IL support practices. Additionally, the IL program only began its assessment data efforts in the fall of 2019.

SRU has the opportunity to use the IL program's data to make informed decisions in developing and providing IL instruction and follow-up support. Recent research provides indicators that students need support from beginning to end of their degree programs. The research provides guidance for universities to provide IL instruction emphasizing developmental work for first-year students and target upper-level academic and professional focused instruction and support following first-year instruction. The recommendation is for the SRU librarians to provide follow-up instruction and support to students throughout their degree programs using IL assessment data to guide practice. The follow-up instruction and support can come in three primary forms, instruction, online guides, and online video tutorials.

SRU has an opportunity to use evidence to target and support student IL needs. SRU does not have a policy requiring the use of evidence to support student IL needs.

The study produced data indicating students have less than perfect IL knowledge and skills following successful IL program participation, particularly on SRU IL Learning Goal 5, focusing on accessing and ethically and legally using information. The study found that students have a post mean of 2.92, which indicates only adequate knowledge. SRU has the opportunity to collect and use evidence like this to target student IL needs following first-year IL program participation.

The IL program for first-year instruction can be supplemented through students' degree programs to promote academic and professional success. Currently, SRU assesses students' IL knowledge and skills by targeting academic research assignments associated with composition courses, typically at the end of the freshman year and by the end of the sophomore year. SRU students are assessed again for professional and university learning goal IL knowledge and skills during capstone courses before graduation. The IL program instructors can provide follow-up first-year program instruction that focuses on advanced IL knowledge and skills for the composition course research assignments to support scholarly academic studies. Similarly, the IL program instructors can provide follow-up instruction that targets professional IL knowledge and skills for students during their capstone courses. These forms of follow-up IL instruction can help SRU students continue developing their IL knowledge and skills for advanced academic and professional research and being better global citizens.

SRU has an opportunity to improve communications to its stakeholders about its IL assessment data that can lead to better IL instruction and support. SRU has no policy for how IL assessment data is collected and disseminated to its stakeholders for existing

IL instruction and support resources. This data is necessary to support the university's ongoing improvement efforts.

The study produced data about student IL knowledge and skill strengths and weaknesses by using IL program assessment data. The data like this can be shared with other SRU members to improve student learning in the form of additional IL instruction, library guides, and video tutorials. Likewise, data can be collected and shared about IL instruction, library guides and tutorials to update these support resources while addressing changes in students' IL needs.

The library's IL program instructors work with SRU librarians to develop library guides to support access and use of scholarly resources. Currently, the SRU library provides guides by topic based on users' RQs, which is a problem since it is unclear that the library guides meet students' needs, particularly first-year students who are underprepared. The university has the opportunity to use the IL program's first-year student assessment data to target students' specific IL needs. These efforts can come in the form of online library guides and video tutorials that target student IL needs, support various learning preferences and provide on-demand support when students need it. The guides and tutorials can be combined with supplemental IL instruction for composition and capstone course assessments. The guides can serve as follow-up support that target IL knowledge and skills covered in the IL program for first-year students and advanced IL knowledge and skills that support upper level course work and professional IL requirements. The recommendation to use IL assessment data and provide students

follow-up support in supplemental instruction, library guides, and video tutorials will provide necessary follow-up support.

Next Steps Following Policy Acceptance

The policy recommendation must be presented, discussed, and approved following SRU's organizational guidelines. The university uses standing committees to present, discuss, and approve policy proposals. First, SRU has a library committee with a mission to propose policies for the university library's services and uses. The library committee is a group of SRU administration, faculty, staff, and student representatives. The library committee typically meets once a year unless any issues or new policy proposals arise. It is expected that the chair of the library committee will call a meeting to receive the policy proposal presentation in November of 2020. The committee will then discuss the proposal and any necessary changes. Since the policy proposal includes a recommendation that the library committee expands its mission to include an IL focus and communicates to the university's overseeing academic affairs committee, the committee will need to consider the proposal in detail.

Once the library committee approves the policy recommendations, the chair will present the policy proposal to the university's academic affairs committee. SRU's academic affairs committee is a larger committee that includes multiple representatives of the university's administration, faculty, staff, and students. The academic affairs committee has the mission to recommend, propose, and approve policies for curricula, academic standards, credits, and other special offerings. The academic affairs committee meets regularly once a month. The library committee reports to the academic affairs

committee. The library committee chair will request the policy proposal to be placed on the academic affairs committee agenda for January 2021. Once the library committee has presented the policy proposal, the academic affairs committee will discuss the proposal, make any necessary changes, and decide whether to deny approval, approve the proposal as presented, approve the proposal with modifications, or request that major revisions be made and the modified policy proposal be presented at a subsequent meeting.

Once SRU's academic affairs committee has approved the policy proposal, it will go into the next school year's catalog. The new policy will not take effect until the beginning of the fall of 2021. However, with the new policy's approval, the SRU community can begin work with planning and preparing to execute the policy.

SRU's librarians have opportunities for improvements following the adoption of the policy recommendations. The development and delivery of follow-up IL instruction sessions and online library guides and video tutorials could provide the opportunity to collect further assessment data. The follow-up resources can include assessments to determine students' feedback concerning the helpfulness of the follow-up resources, possible improvement, and mastering of IL concepts and skills.

First, the student feedback on resource helpfulness and improvement can be used to adjust the resources, such as how the information is presented and any additional information that needs to be included. As student learning preferences and technological advancements evolve, the instruction, library guides, and video tutorials can also involve meeting students' IL needs, using student feedback to make improvements. Second, the follow-up resources can include assessments that measure students' mastery of content

and skills. SRU librarians can use the assessment of content and skills to identify students who have achieved IL milestones and reward micro-credentials and digital library badges. Students can use the micro-credentials and digital badges in their marketing efforts to continue their academic studies, such as admission applications for graduate school entrance, and future employment. Student can display micro-credentials and digital badges on their professional social media profiles, resumes, vitae, and other job application forms when seeking work positions.

Conclusion

SRU can benefit from using current research found in professional literature and evidence collected from its stakeholders to guide its policies and practices. The recommendations target opportunities for improvements in student learning while providing data on the university's effectiveness. The recommendations use SRU's existing resources and organization structure and will require little or no additional resources. The recommendations include built-in evaluations to provide indicators of effectiveness and data for future improvements.

The four policy recommendations provide a systemic approach to promoting, teaching, and supporting student IL learning. The recommendations target SRU's stakeholders and provide a communication structure for sharing IL concerns. The recommendations provide data that can be used to provide measures of SRU effectiveness and student achievement. The recommendations promote and support student learning necessary for success in their academic studies, professional pursuits, and lives as global citizens.

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Appendix B: Glossary of Terms

Association for College and Research Libraries' Standards for Information

Literacy Standards: is also called the ACRL standards. With the release of the Standards for Information Literacy in 2000, the ACRL is and has been one of the leading organizations in information literacy standards, including in defining and prescribing IL instruction and assessment (ACRL, 2000). The ACRL (2000) standards were results of many librarians working to improve IL instruction in the 1990s, namely Carol Kuhlthau's (1991) work. Kuhlthau provided terminology that defined the challenges students face when resolving information problems, including her Information Search Process theory that describes six stages. Kuhlthau's (1991) ISP stages provide a framework for librarians to use in mapping IL curriculum and assessment goals that help prepare students with IL knowledge and skills to resolve information dilemmas. The ACRL (2000) standards are aligned and equated to the university's IL learning goals.

Boolean Operators: are the use of and, or, not to combine keywords when searching an online library catalog, digital library, or database (Reitz, 2019).

Flipped Classroom: is when instruction inside the classroom environment focuses on experiential learning and where theoretical or foundational knowledge is gain outside the classroom environment (Greer et al. 2016).

Hybrid Classrooms or Hybrid Learning Environments: are learning environments that blend traditional face-to-face interactions with online interactions to meet instructional learning goals (Greer et al. 2016).

Information Literacy Assessment: is defined as the ability to measure the influence of IL instruction on student learning (Erlinger, 2018).

Information Literacy: is defined as the ability to recognize when information is needed, access, evaluate, and effectively use information ethically, legally, and economically for a specific purpose (ACRL, 2000).

Information Literacy Programs: in university settings are programs developed and administered by library staff to promote information literacy knowledge and skill development throughout students' academic careers (Black & Allen, 2017).

Information Literacy Instruction: is the teaching of IL terminology, concepts, resources, tools, and skills by librarians and other educators to students (Bapte, 2019).

Information Literacy Problem or Information Problem: is when a person is aware of a lack of knowledge or understanding requiring information and related information literacy skills to resolve. The information problem is recognized in Kuhlthau's *initiation* stage (Kuhlthau, 1991).

Information Science: is the study of information in all its forms, information sources, the management of information, and the technology surrounding the use of information (Reitz, 2019).

Information Technology: is the study of the processing and management of information by computer and a critical component of modern information science (Reitz, 2019).

Keyword: a significant word or phrase relating to an information object (Reitz, 2019).

Learning Goals: are instructional targets that teachers aim to help their students achieve and are based on prescribed criteria, such as standards, theories, or frameworks. Learning goals for information literacy instruction.

Two-Session Models: or two-shot, of IL instruction are IL programs that use two separate sessions to deliver IL instruction to students with each lasting approximately 50 minutes each and include some form of formative assessment (Barefoot, 2017).

Appendix C: University Information Literacy Program (UILP) Grading VALUE Rubric

University Information Literacy Learning Goal	Level 4 performance: 4 points	Level 3 performance: 3 points	Level 2 performance: 2 points	Level 1 performance: 1 point	Level 0 performance: 0 points
Determine the Extent of Information Needed	Effectively defines the scope of the research question or thesis. Effectively determines key concepts. Types of information (sources) selected directly relate to concepts or answer research question.	Defines the scope of the research question or thesis completely. Can determine key concepts. Types of information (sources) selected relate to concepts or answer research question.	Defines the scope of the research question or thesis incompletely (parts are missing, remains too broad or too narrow, etc.). Can determine key concepts. Types of information (sources) selected partially relate to concepts or	Has difficulty defining the scope of the research question or thesis. Has difficulty determining key concepts. Types of information (sources) selected do not relate to concepts or answer research question.	Does not meet Level 1 performance

			answer research question.		
Access the Needed Information	Accesses information using effective, well-designed search strategies and most appropriate information sources.	Accesses information using variety of search strategies and some relevant information sources. Demonstrates ability to refine search.	Accesses information using simple search strategies, retrieves information from limited and similar sources.	Accesses information randomly, retrieves information that lacks relevance and quality.	Does not meet Level 1 performance
Evaluate Information and its Sources Critically	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when	Does not meet Level 1 performance

	presenting a position.			presenting a position.	
Use Information Effectively to Accomplish a Specific Purpose	Communicates, organizes and synthesizes information from sources to fully achieve a specific purpose, with clarity and depth.	Communicates, organizes and synthesizes information from sources. Intended purpose is achieved.	Communicates and organizes information from sources. The information is not yet synthesized, so the intended purpose is not fully achieved.	Communicates information from sources. The information is fragmented and/or used inappropriately (misquoted, taken out of context, or incorrectly paraphrased, etc.), so the intended purpose is not achieved.	Does not meet Level 1 performance
Access and Use Information Ethically and Legally	Students use correctly all of the following information use strategies (use of citations and references;	Students use correctly three of the following information use strategies (use of citations and references;	Students use correctly two of the following information use strategies (use of citations and references;	Students use correctly one of the following information use strategies (use of citations and references;	Does not meet Level 1 performance

choice of paraphrasing, summary, or quoting; using information in ways that are true to original context; distinguishing between common knowledge and ideas requiring attribution) and demonstrate a full understanding of the ethical and legal restrictions on the use of published, confidential, and/or proprietary information.

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Appendix D: University Information Literacy Program Pre/Post Tests

UILP Pretest

Instructions: Please answer the following questions.

1. Your university identification number

Research and describe the connection between caffeine consumption and how it may affect the student population attending high school. Locate and use a peer-reviewed professional journal for this assignment.

2. Write 1 sentence summarizing the subject of the resource you selected and provide a formal Modern Language Association (MLA) citation for the resource used.
3. Provide a formal MLA reference for the resource you used.

UILP Posttest

Instructions: Please answer the following questions.

1. Your university identification number

Research and describe the connection global warming and how it may affect the farming practices. Locate and use a peer-reviewed professional journal for this assignment.

2. Write 1 sentence summarizing the subject of the resource you selected and provide a formal Modern Language Association (MLA) citation for the resource used.
3. Provide a formal MLA reference for the resource you used.