

INFORMATION LITERACY SKILLS PROFICIENCY AND ACADEMIC ACHIEVEMENT
OF SELECT 12TH-GRADE STUDENTS AT A HIGH-MINORITY HIGH-POVERTY
SCHOOL

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DEDICATION

This tome is dedicated to my parents, James and Fannie Thomas, for their wondrous, yet probably unknowing, inspiration in my educational journey. I thank God for the parents he gave me because of their love of God, because of God's teachings they instilled in me, and because of their love of reading. It is from hearing and seeing my parents read throughout the years I had with them that I have generated a passion for books and seeking knowledge. Thank you, mom and dad, for encouraging me from afar; and may your spirits continue to surround me and comfort me.

ABSTRACT

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Purpose

Responding to a deficit in research on information literacy skills proficiency at the secondary level, and specifically in a low-socioeconomic urban school district, the purpose of this mixed methods study was to explore and to compare the information literacy skills knowledge and proficiency of 12th-grade students to their academic achievement. These students ranged academically from low-achieving to high-achieving, at a large high-minority, high-poverty urban school district. This comparison was made by using an information literacy skills assessment, Tool for Real-time Assessment of Information Literacy Skills (TRAILS) to ascertain job market or college and career readiness for employing information literacy skills after high school. The TRAILS is an online multiple-choice assessment, created based on the American Association of School Librarians' (AASL) Standards for the 21st-Century Learner. TRAILS assesses students on five criteria: ((a) developing the research topic; (b) identifying potential sources; (c) developing, using, and revising strategic searches; (d) evaluating sources and information; and (e) using information responsibly, ethically and legally.

Method

For the quantitative phase, Pearson's product-moment correlation coefficients was employed to analyze scores from the TRAILS assessment and academic achievement, as measured by collegiate and weighted GPAs of 12th-grade students. Following the quantitative phase, qualitative interviews were conducted using extreme-case criteria of

students scoring highest and lowest on the assessment. Mixed analysis was conducted by comparing interview response data to participant assessments to deepen the understanding of perspectives on information literacy knowledge.

Findings

Findings indicate there was a correlation between TRAILS scores and academic achievement based on collegiate and weighted GPA. The majority of students achieving higher TRAILS scores also correlated with earning a higher GPA, and the majority of students receiving the lowest TRAILS scores similarly were associated with lower GPAs. Males scored higher for total correct, while having a slightly lower GPA. Qualitative findings indicated higher-achieving students have a better perception of job market or college and career readiness as compared to lower-achieving students.

KEY WORDS: Information literacy, Academic achievement, Tool for real-time assessment of information literacy skills, TRAILS, Poverty, Minority, High-achieving, Low-achieving, Secondary, High school, GPA.

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CHAPTER I

Introduction

Across decades, ensuring students are prepared to be lifelong learners and productive contributors to society has been important to educators like me. As a librarian, teaching individuals to become self-sufficient learners who ethically assemble and utilize credible, reliable information for academic and personal research is a primary teaching objective. Additionally, my belief is all students graduating from secondary institutions should be information literate, regardless if they are directly entering the job market or continuing education postsecondarily. However, as educators we must instruct students how to recognize the significance of understanding what information literacy entails. According to Zurkowski (1974):

Information is not knowledge; it is concepts or ideas which enter a person's field of perception, are evaluated and assimilated reinforcing or changing the individual's concept of reality and/or ability to act. As beauty is in the eye of the beholder, so information is in the mind of the user. (p. 4)

Zurkowski (1974), former president of the Information Industry Association, first coined the phrase "*information literacy*" (p.1), and forecasted the varied routes and sources of available information emerging throughout the decades (Badke, 2010). His recommendation to the National Commission on Libraries and Information Science proposed the establishment of a universal program to achieve widespread information literacy in the ensuing 10 years. Furthermore, Zurkowski (1974) declared people to be information literates when they could employ information resources in work functions and when they could utilize primary resources in resolving inquiries. Later, Burchinal

(1976) proclaimed a new set of skills must be acquired to be considered information literate, such as locating and using information for problem-solving, in order to make efficient and effective decisions. Additionally, Owens (1976) avowed:

beyond information literacy for greater work effectiveness and efficiency,
information literacy is needed to guarantee the survival of democratic institutions.
All men are created equal but voters with information resources are in a position
to make more intelligent decisions than citizens who are information illiterates.
(p. 27)

As indicated, the 1970s brought a plethora of definitions to the meaning of information literacy; however, with the introduction of the computer age in the 1980s, a rapidly evolving information environment was ushered (Behrens, 1994). Subsequently, the American Library Association's ([ALA], 1989) final report of the Presidential Committee on Information Literacy, defined information literacy as a set of four skills necessitating individuals to: (a) recognize, (b) locate, (c) evaluate, and (d) utilize information effectively. Based on the aforementioned skills, the Association of College and Research Libraries (ACRL), also a division of ALA, developed in 1999 the following five Information Literacy Competency Standards for Higher Education, describing an information literate student (ACRL, 2000).

- Standard One - The information literate student determines the nature and extent of the information needed.
- Standard Two - The information literate student accesses needed information effectively and efficiently.

- Standard Three - The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.
- Standard Four - The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose.
- Standard Five - The information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally. (ACRL, 2000)

More recently, ALA members adopted a new definition of information literacy, which is;

Information literacy is the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning. (ACRL, 2015, p. 3)

In addition, ACRL members adopted a new framework underscoring that, “Students have a greater role and responsibility in creating new knowledge, in understanding the contours and the changing dynamic of the world of information, and in using information, data, and scholarship ethically” (ACRL, 2015, p. 2). According to Farmer and Henri (2008), “the early twenty-first century is giving rise to the ‘knowledge age’ with the awareness that information in itself cannot solve problems; it is the effective *use* of information that promised solutions. People need to be information literate” (p. ix).

Job Market and College and Career Readiness

Harvey, Slate, Moore, Barnes, and Martinez-Garcia (2013) asserted readiness for postsecondary academic success is essential for college and career readiness. ACT (2008), formerly American College Testing, administrators defined College and Career Readiness as:

the acquisition of the knowledge and skills a student needs to enroll in and succeed in credit bearing first-year courses at a postsecondary institution, such as a two or four-year college, trade school, or technical school, without the need for remediation. (p. 1)

Nonetheless, readiness for the workplace requires the same rank of knowledge and skills (ACT, 2008). Conley (2011) described various categories of readiness, as follows:

- Work ready – meets basic expectations regarding workplace behavior and demeanor
- Job ready – possess specific training necessary to begin an entry level position
- Career -ready – possesses key content knowledge and key learning skills and techniques sufficient to begin studies in a career pathway
- College ready – is prepared in the four keys to college and career readiness necessary to succeed in entry level general education courses; (a) key content knowledge; (b) key cognitive strategies; (c) key learning skills and techniques; and (d) key transition knowledge and skills

Statement of Problem

In 2008, as indicated in Texas Education Agency's ([TEA], n.d.) Texas Essential Knowledge and Skills (TEKS), secondary students are required to produce research

projects in most core subject areas. According to the Texas College and Career Readiness Standards adopted by the Texas Higher Education Coordinating Board (2009), producing academically acceptable research projects entails using information literacy skills. Therefore, students must; (a) recognize what information is needed, (b) locate the necessary information, (c) evaluate its credibility and reliability, and (d) employ the information within their project in an ethical manner. The Texas Higher Education Coordinating Board members consider the use of these standards as an indicator of problem-solving and critical thinking skills for college and career readiness (Educational Policy Improvement Center [EPIC], 2008). However, the problem is determining the proficiency level attained by graduating 12th-grade students, to ascertain job market or college and career readiness. According to Gross and Latham (2012), “many students come to college without proficient information literacy skills” (p. 574).

Some research exists on information literacy skills and students’ lack of proficiency in transitioning from secondary to postsecondary education (e.g., Gross, Latham, & Armstrong, 2012; Smith, Given, Julien, Ouellette, & DeLong, 2013). However, scant research is available on information literacy skills proficiency at the secondary level, preparing students for job market or college and career readiness (Kovalik, Yutzey, & Piazza, 2013). For students entering the workforce after graduation, information literacy skills are required for researching job openings and business-related information for employment seekers (Inskip, 2015). As students enter college, they will most likely be faced with mining information sources for research projects and studies, and will generally need a good foundation to accomplish this successfully. Averill and Lewis (2013) reported students they paneled “wished they had received additional

instruction in the research process at the secondary level or that they had paid more attention to the instruction they were given” (p. 114). Despite access to myriad information sources, students’ aptitudes for finding, evaluating, and applying information are negligible (Averill & Lewis, 2013).

Subgroups of Information Literacy

As noted previously, many definitions of information literacy have evolved over the years, and some of these definitions are indicative of thinking critically, using information ethically, and recognizing how information is presented. Information manifests in numerous multi-media formats, ranging from simple to complex, including printed words, pictures, graphs, and charts (Eisenberg, Lowe, & Spitzer, 2004). According to Eisenberg et al. (2004), negotiating complex information formats requires skillfully comprehending associated information literacies, such as computer, visual, and digital.

Computer literacy. This skill requires students be cognizant of employing a computer for word processing, developing spreadsheets, and utilizing other software tools (Eisenberg et al., 2004). Being computer literate not only requires students to manipulate documents and interact personally with information, but according to Eisenberg and Johnson (2002), the computer is an extension of information processing. For example, students may exhibit information digitally via presentations to teachers and other students or electronically construct visually graphic assignments. Vaz (2004) asserted computer literacy might lead to a better life, when students understand how to evaluate, communicate and stay up-to-date with changing information, while also comprehending how information is integrated socioculturally into their lives.

Digital literacy. Digital resources are electronically produced resources found online requiring students to critically examine and determine if the information is credible and reliable (Eisenberg et al., 2004). According to Cordell (2013), undergraduate students should have a level of digital literacy to accomplish academic tasks; therefore, professors are now including assignments utilizing social networking and multimedia sites, such as Facebook, YouTube, and Twitter, in their syllabi. Cordell (2013) suggested these curriculum additions require an additional level of learning with which students should become accomplished digital information users (Cordell, 2013). Kivunja (2015) indicated with the plethora of information formats in the 21st century, employees will be required to manage information daily; and thus, will need to be prepared.

Visual literacy. Braden and Hortin (1982) defined visual literacy as the ability, “to understand and use images, including the ability to think, learn, and express oneself in terms of images” (p. 41). Making sense of visual information, such as photographs and illustrations, is based on prior observations of our environment (Eisenberg et al., 2004). Visual literacy is composed of three components; (a) visual learning—acquiring and constructing knowledge visually, (b) visual thinking—mental organization of shapes and images, and (c) visual communication—expressing ideas using symbols (Moore & Dwyer, 1994; Wileman, 1980).

Methodological Framework

Johnson, Onwuegbuzie, and Turner (2005) defined mixed methods research, “as the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts, or language in a single study or set

of related studies” (p. 19). Mixed methods should be employed to answer research questions in an exceptionally thorough manner (Johnson et al., 2005). Collins, Onwuegbuzie, and Sutton (2006) developed a 13-step mixed methods typology, which is separated into three parts, to help researchers discuss their findings using rich, thick descriptions and explanations. Initially, I discuss the first five steps of the typology, constituting part one—formulation of the research.

Collins et al. (2006) posited 13-steps for mixed methods research. The 13-steps can be grouped within three stages. First, is the Formulation Stage. Within this stage are the first five steps: (a) Step 1: determining the mixed goal of the study; (b) Step 2: formulating the mixed research objective(s); (c) Step 3: determining the rationale of the study and the rationale(s) for mixing quantitative and qualitative approaches; (d) Step 4: determining the purpose of the study and the purpose(s) for mixing quantitative and qualitative approaches; and (e) Step 5: determining the mixed research question(s). Second, is the Planning Stage consisting of two steps: (a) Step 6: selecting the mixed sampling design and (b) Step 7: selecting the mixed research design. The third stage is the Implementation Stage, which is inclusive of: (a) Step 8: collecting quantitative and/or qualitative data; (b) Step 9: analyzing the quantitative and qualitative data using respective analyses techniques; (c) Step 10: validating/legitimizing the mixed research findings; (d) Step 11: interpreting the mixed research findings; (e) Step 12: writing the mixed research report; and (f) Step 13 reformulating the mixed research question(s). These 13 steps are both interactive and recursive (Collins et al. 2006).

Goals and objective of study. Nine goals of a mixed methods research study, identified by I. Newman, Ridenour, C. Newman, and DeMarco (2003) are: (a) to add to

the knowledge base; (b) to have a personal, social, institutional, and/or organizational impact; (c) to understand complex phenomena; (d) to measure a change; (e); to predict; (f) to test new theories; (g) to generate new ideas; (h) to inform constituencies; and (i) to examine the past. Three of these goals are employed in this study: (a) to add to the knowledge base; (b) to have a personal, social, institutional, and/or organizational impact; and (c) to understand complex phenomena.

In order to assist practitioners in developing pertinent instructional strategies for information literacy, the first goal of adding to the knowledge base was to understand and to compare information literacy skills knowledge and information literacy skills proficiency among 12th-grade students in a high-minority, high-poverty urban school district. This comparison, by using an information literacy skills assessment, was to ascertain job market or college and career readiness for employing information literacy skills after high school. As a result of findings of this assessment, a connection was made to the second goal of having an organizational impact. To effect change by helping to increase information literacy skills in the district where I am employed, I provided current research that might support the need for including information literacy skills as part of the secondary curriculum for all students. Martin, Garcia, and McPhee (2012) noted the Commission on the Future of Higher Education in 2006 and the National High School Summit Report of 2005 each documented the rising urgency of preparing high school students for college coursework. The suggested pathway to accomplish this task is by strengthening the school curriculum in instructing information literacy skills and enhancing the partnership between secondary and postsecondary institutions to prepare college bound students (Martin et al., 2012). Effecting organizational change within the

district could mean formulating K-16 collaborations between school librarians and area university academic librarians to enhance information literacy preparedness for our students.

In addition, by using a social learning lens via application of Vygotsky's (1978) Sociocultural Theory and Bandura's (1971) Social Learning Theory, the third goal of understanding complex phenomena was to comprehend how students in low-socioeconomic, high-minority, urban high schools are academically impacted by familial, social, and cultural factors. Goal three was accomplished by analyzing participant information literacy skill assessments, grade-point average (GPA), and participant perceptions of their information literacy skills via interviews to determine how this proficiency influenced academic achievement. York, Gibson, and Rankin (2015) posited, "Academic achievement is almost entirely measured with grades (by course or assignment) and GPA" (p. 7). The objective of this mixed methods study was to assess information literacy skills, as well as, to explore participant perceptions of job market and college and career readiness.

Purpose of study. Responding to a deficit in research on information literacy skills proficiency at the secondary level, and specifically in a low-socioeconomic urban school district, the purpose of this mixed methods study was to explore and to compare the information literacy skills knowledge and proficiency of 12th-grade students. These students ranged academically from low-achieving to high-achieving, at a large high-minority, high-poverty urban school district. The school was a comprehensive high school. In 1918, members of the Commission on the Reorganization of Secondary Education, in their Cardinal Principles of Secondary Education report, created the term

comprehensive school (Department of the Interior, 1918). In their report, commission members asserted that a comprehensive school is a typical high school “embracing all curriculums in one unified organization” (Department of the Interior, 1918, p. 24).

According to Wraga and Lowe (1996) and Wraga (1998) non-comprehensive schools are vocational schools; however, that definition has broadened in recent years to include schools not labeled as comprehensive. For this study, the sampling framework focus was students in a traditional comprehensive high school.

This study included mixed methods, reflective of a pragmatist paradigm, which focuses on the best method to answer the research question at hand. As a pragmatist (Onwuegbuzie & Leech 2005), applying a mixed methods framework to this research allowed for a rich study via substantial quantitative analyses of the participants’ information literacy skills assessment, and a comparative uncovering and examination of qualitative data and themes through targeted follow-up interviews (Creswell, 1995). Being a pragmatist allowed me to concentrate on the research problem (Creswell, 2009) of information literacy skills knowledge and proficiency in low-socioeconomic, high-minority high school, employing quantitative and qualitative methods to understand the differences and similarities among the varied students. Epistemologically and axiologically, my view is culture influences the knowledge of and value of high-poverty, minority, students’ eruditions of information skills. As a high school information literacy specialist/librarian in a low-socioeconomic, high-minority urban school district, my desire was to understand how the results of this research can support students, at all achievement levels, to be prepared to effectively and efficiently use information literacy skills to enter the job market or to be college and career ready.

Educational Significance

By understanding gaps in knowledge and in proficiency of information literacy skills using the social constructivist paradigm throughout this study, school librarians can assist high-poverty, minority urban secondary students in comprehensive and non-comprehensive schools, to become more information literate for job market and for college and career readiness. Based on the social constructivist's paradigm that knowledge is constructed socially and shared with other individuals (Bryman, 2001), Vygotsky's (1978) sociocultural theory indicated learning is a social event and happens when interaction between the learner and other people in their surroundings occur. Moreover, collaborations between public school librarians and postsecondary academic librarians in information preparedness might ensure incoming freshmen are equipped in applying information literacy skills necessary for postsecondary transition.

Conceptual Framework

As formulated by Addison and Meyers (2013), using synthesized historical information literacy and library science literature, the conceptual framework of information literacy employed in this study is characterized by three pillars: (a) information literacy as acquiring information age skills, (b) information literacy as cultivating thinking skills, and (c) information literacy as engaging in information as a social construct. The first concept purports 21st century learners have an abundance of digital sources available via the ubiquitousness of electronic devices and other information sources (Eisenberg et al., 2004); thereby, sanctioning advancement in information literacy skills (Addison & Meyers, 2013). The second conceptualization emphasizes information literacy cognitively for problem-solving, critical thinking, and

other intellectual skills. The third concept conveys general individual experiences of “living, learning, and working in an information-rich society,” in which technology frequently changes and expectations continuously evolve (Addison & Meyers, 2013, p. 7).

Concept one. Information literacy is represented by the acquisition of information age skills in supposition the learner employs ALA’s information literacy standards of locating, evaluating, and effectively using required information. The history of information literacy skills began before information was digitized, when bibliographic instruction occurred during the 1980s, requiring manual inquiry by researchers to be comprehensive, accurate, current, and reliable (Taylor, 1986). Later, information management was added to information age skills (Bundy, 2004); however, being skilled at managing information has developed more in theory than in practice (Addison & Myers, 2013). School libraries support the information literacy perspective of skill acquisition because it supports schools’ missions of lifelong learning (Bundy, 2004). Eisenberg et al. (2004) espoused, “an economy based on information requires workers who will know how to locate, analyze, manage, interpret, use, and present information in all of its formats” (p. 176).

Concept two. Information literacy as cultivating habits of mind is primarily a cognitive conceptualization, concentrating on how the brain processes information, emphasizing reflexivity of tasks and critical problem solving (Wolf, 2003). Various process models exist, such as Eisenberg and Berkowitz’s (1990) *Big Six* research method, which encompasses six research steps. From project conception to completion, the student would follow these steps: (a) defining the task, (b) seeking information strategies,

(c) locating and accessing information, (d) utilizing information, (e) synthesizing information, and (f) evaluating resources. Additionally, Kuhlthau's 1991 information seeking research model revealed research phases and the thoughts, feelings, actions, and strategies associated with each, as the researcher transitions through each phase. The Independent Investigation Method (Sheldon & Morse, 2002) follows a 7-step process, which offers basic level and proficient level features, can be used individually or by student groups. The seven steps are: (a) choosing a topic, (b) goal setting, (c) researching sources, (d) organizing and noting sources, (e) evaluating goals, (f) organizing the product, and (g) research presentation (Sheldon & Morse, 2002).

Concept three. Information literacy as a social practice is aligned with sociocultural literacy scholars promoting information literacy as proficiencies through which learners must maneuver (Addison & Meyers, 2013). Formed under the perspective of the multi-literacies framework, sociocultural literacy scholars envisioned information literacy as the ability to move through society (New London Group, 1997). This ability to move through society is accomplished by adapting learned knowledge for daily social or work environments in a continually evolving information rich society (Addison & Myers, 2013). Depicted in Figure 1 is my interpretation of the conceptual framework, intertwining the three perceptions of information literacy. When acquiring information age skills, it is important to formulate a habit of utilizing a process on research projects, while also working with and learning from others.

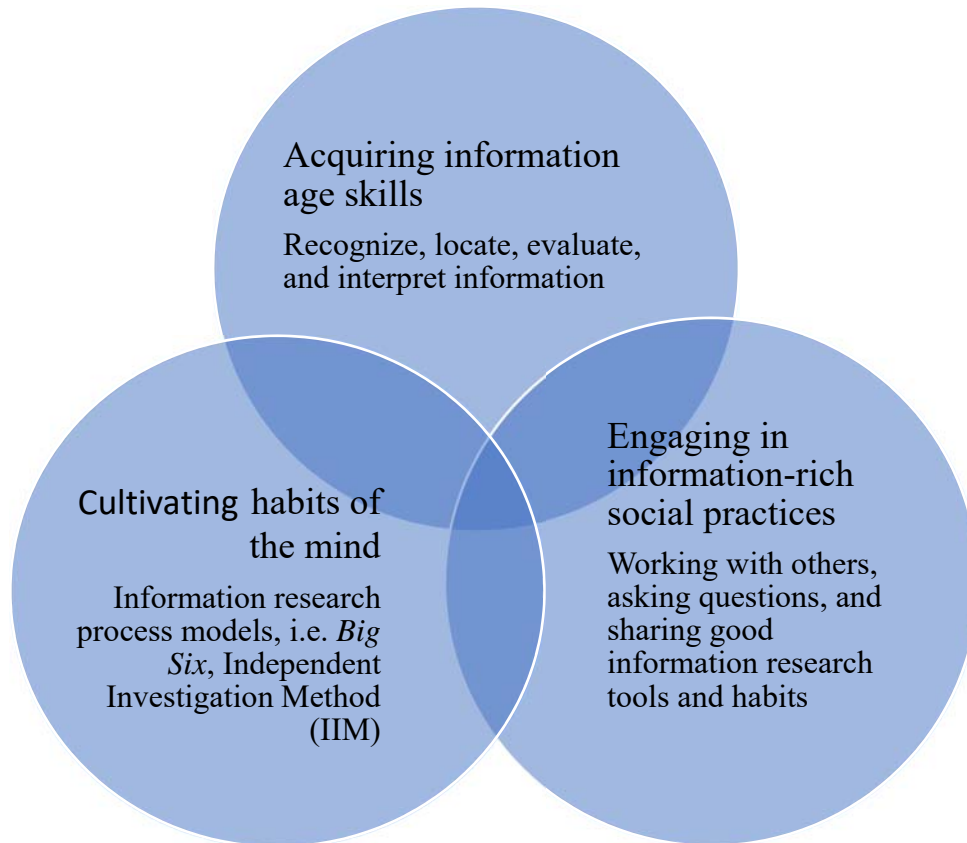


Figure 1. Conceptual framework of concept connections. This graphic demonstrates how each of the three concepts has a connection to the other.

Theoretical Framework

Coley and Baker (2013) asserted:

children raised in poverty today will grow up in circumstances that, the data tell us, will give them a small, if not negligible, chance of following a path that will lead them to a markedly better place than where they began. (p. 2)

In the last several years, as an educator working in a Title I school district providing free or reduced rate lunches to a substantial portion of a predominantly Hispanic, ethnically diverse population, this researcher has questioned how familial, social, and cultural factors affect learning and knowledge mastery of ethnically diverse high-poverty secondary students. According to Wang, Bruce, and Hughes (2013), “growing attention is being given to the principles of sociocultural theories and their application to IL research in community, workplace, and school contexts...” (p. 297). Further, Wang et al. (2013) asserted that information literacy is entrenched within the sociocultural lens of various societies, and it is imperative as educators we understand community protocols in order to become efficient teachers of information literacy (Tuominen, Savolainen, & Talja, 2005).

Vygotsky and other cohorts (John-Steiner & Mahn, 1996) initially framed sociocultural schemes in the 1920s and 1930s. Vygotsky (1978, 1986) described socioculturalism as an interaction between the learner and other people or other measures, acknowledging a connection between cognitive development and practices and customs of particular groups is present. According to Johnson (2009), no segregation exists between cognitive development and the social, cultural, and historical frameworks from which they develop. Vygotsky (1978) affirmed learning is developed via two

avenues: (a) interactively between the learner and social interactions and (b) interactively within learners themselves. In 2011, the National Center for Education Statistics (NCES) indicated more than 19.9 million students, hailing from various cultures, were enrolled in institutions of higher learning (Blas, 2014). According to Blas (2014), “understanding the basic elements of a student’s culture empowers instructors to teach effectively, building on a shared foundation of knowledge” (p. 33). Based on the social constructivist paradigm that knowledge is constructed socially and shared with other individuals, Vygotsky’s (1978) sociocultural theory endorsed that learning is a social event, and happens when interaction between the learner and other people and happenings within their surroundings occur. Vygotsky’s sociocultural framework postulates: (a) cognitive development occurs by interacting socially through activities; (b) development is dependent upon cultural sign systems, such as oral and written language and number systems; (c) development occurs mentally via acquiring and internalizing language; and (d) development occurs through learning with skilled support in the zones of proximal development. According to Vygotsky, learning does not occur when the task is too easy, but occurs in the zones of proximal development (ZPD) in tandem with adult assistance. Genishi and Dyson (2009) emphasized, “regardless of children’s culture, ethnicity, gender, language, race, or social class, their learning is profoundly social” (p. 8).

Bandura’s (1971) Social Learning Theory has three key learning concepts that were applied to this study. The first concept is children can learn by observing. Observational learning is integral when teaching information literacy skills by demonstrating how to access information. The second concept is, children should have a sense of accomplishment, which is paramount to producing research projects because

students should believe goals can be accomplished, and they should feel proud of their achievements. The third concept, behavior change, is not an indicator of learning. Sometimes a person can learn the skill; however, the skill might not be used or demonstrated. This example is another instance wherein Bandura's (1971) Social Learning Theory might be employed within the classroom. Students can have knowledge of information literacy skills; however, perchance proficiency is not being exhibited during their research.

In his Funds of Knowledge studies, Moll (1992, 1994) concluded many Hispanic children are regarded as having limited intellectual capability. Conceivably, teachers are not evaluating a student's knowledge outside of what is considered the standard. Moll, Amanti, Neff, and Gonzalez (1992) explained some teachers might not recognize or find significance in multicultural experiences Hispanic students can share. Kiyama and Rios-Aguilar (2017) supported funds of knowledge acknowledging that teachers should use student backgrounds as a knowledge source. When examining methods to teach diverse cultures, perhaps importance should be placed on building upon the information these students have gained in their individual cultural experiences and relating to it to their understanding and demonstrating of information literacy skills.

Literature Search, Identification, and Eligibility Procedure

The review of literature examination is central to understanding the research topic, considering why the topic is important, and refining research themes (Hendry & Farley, 1998). Searches for relevant studies were executed employing applicable keywords discovered in article titles, article abstracts, or articles themselves. A list of potential key words was developed based on dissertation themes including: (a)

information literacy, (b) college and career readiness, (c) twelfth-grade students, (d) minority students, (e) high-poverty students, (f) urban school districts, (g) traditional school, (h) non-traditional school, (i) comprehensive school, (j) non-comprehensive school, (k) high achievement, and (l) low achievement. A Boolean search was then conducted employing search strategies using various two- to three-word combinations of the focus themes. Utilizing the aforementioned key words resulted in 4,454 returned studies from ERIC, Library and Information Science Source, and Information Science and Technology, of which 2,227 were selected to examine for dissertation research support. According to Cronin, Ryan, and Coughlan (2008), paring down studies to final results was vital for information management; however, acquiring the necessary literature was also crucial.

Research Questions

Quantitative research questions. The following quantitative research question addressed high-poverty, minority secondary students' scores on an information literacy skills assessment in comparison to grade-point average.

To determine if a correlation was present between information literacy skills proficiency and academic achievement as measured by GPA of 12th-grade high school students in a diverse school setting, the following research question was explored:

What is the relationship between knowledge of information literacy skills and academic achievement among 12th-grade students in a traditional comprehensive school?

Qualitative research questions. The following questions were addressed after the quantitative phase by selected participants based on scoring criteria:

1. What are the perceptions of 12th-grade students in a traditional comprehensive school regarding obtaining information literacy skills for job market or for college and career readiness?
2. How have sociocultural (e.g., family, social, cultural) factors influenced the perceptions of information literacy skills needed for job market or for college and career readiness?

Mixed methods research question. The following mixed methods research question was addressed to reveal a deeper understanding of the connection between the assessment and the perceptions:

According to Bandura's three key concepts, children learn by observing, children need a sense of accomplishment, and children's behavior change is not an indicator of learning. Integrating these three concepts, what is the relationship between perceptions of two groups of students; specifically, 12th-grade higher-achieving and 12th-grade lower-achieving students' information literacy skills and their information literacy assessment proficiency?

Quantitative Research Hypotheses

The following two quantitative hypotheses were tested in this study:

1. A relationship exists between knowledge of information literacy skills and academic achievement among 12th-grade students in a traditional comprehensive school;
2. A difference exists in information literacy knowledge between higher-achieving and lower-achieving 12th-grade students in a traditional comprehensive high school on an information literacy assessment.

Definition of Terms

Comprehensive schools. The comprehensive school model, established in the early 20th century, offers instruction in a variety of curricula to educate children, eventually preparing them for the employment or college (Grubb & Lazerson, 2004).

Collegiate GPA. Collegiate or unweighted scale is based on the grade attained and not on class difficulty. Collegiate GPA scale ranges from 0.0 to 4.0 (Lindsay, 2015). The selected school uses the term Collegiate GPA as the type of GPA based on the 4.0 scale.

High-achieving. According to the Cambridge Dictionary, a high-achiever is defined as “a person who achieves more than the average person in their work” (“high achiever, 2017). In this study, high achieving is defined as those students performing above grade level academically as indicated by a collegiate GPA between 4.0 and 2.5 on a 4.0 school scale.

Information literacy. Behrens, in her 1994 study of information literacy definitions throughout history, indicated information literacy has moved from tool-based to cognitive skills. The ALA (1989) defines information literacy as the ability to identify, to uncover, to assess, and to employ information in an effective and ethical manner.

Lower-achieving. Cambridge Dictionary defines a low-achiever as a person who achieves “less than the average” (“low achiever”, 2017). In this study, low-achieving is defined as those students performing at or below grade level as indicated by a GPA below 2.5 on a 4.0 school scale.

Weighted GPA. Weighted GPA ranges on a scale from 0 to 5.0, taking into account AP and/ Honors courses. An A on the weighted scale is considered 5.0 based on

the difficulty of the class (Lindsay, 2015). The selected school uses a 6.6 weighted scale; however students may have a higher weighted GPA due to other course associated factors. For example, students taking pre-AP courses have a 7.6 weighted scale, and students taking AP, Gifted and Talented, and Duel Credit courses have an 8.6 weighted scale.

Delimitations

A comprehensive high school in a Title I urban school district, having an estimated enrollment of more than 70,000 students near Houston, Texas, is the focus of this study. The research was limited to 12th-grade students at this comprehensive secondary school. The foci of the study were restricted to students' information literacy skills knowledge for academic achievement, their perceptions of information literacy skills proficiency for job market or college and career readiness, and sociocultural factors influencing readiness.

Limitations

Lincoln and Guba (1985) indicated trustworthiness encompassed four components: (a) credibility, (b) transferability, (c) dependability, and (d) confirmability, and "these are the constructionist equivalents to internal and external validity, reliability, and objectivity" (p. 300). According to Onwuegbuzie (2000), internal and external validity and credibility threats could occur at any one or all three phases of the inquiry process, which include: (a) research design/data collection, (b) data analysis, and (c) data interpretation. These threats can occur at specific times in the quantitative and qualitative components of a research study. Onwuegbuzie and Johnson (2006) declared legitimization, validity as characterized in mixed methods study, is complex; nonetheless,

addressing these threat types was paramount to the trustworthiness of the research, irrespective of the quantitative or qualitative components. In the following paragraphs, I have identified and discussed several threats to internal and external validity occurring in the quantitative phase, internal and external credibility in the qualitative phase, and legitimation in the mixed methods phase.

Quantitative phase – external validity. External validity is characterized by determining whether generalizations can be made to research findings (Onwuegbuzie & Leech, 2007b). Examples of external validity threats possibly occurring during one or more stages of the quantitative phase are: (a) population validity, (b) ecological validity, and (c) specificity of variables (Onwuegbuzie, 2000). Each of these threats is discussed in the following sections and how they manifested during this study.

Population validity. According to Onwuegbuzie (2003), population validity is an important outcome in most research studies, and it can arise at the research design/data collection, data analysis, or data interpretation stages. Specifically, population validity is characterized by extending data findings to the general population schema of the study. In this study, the population framework is 12th-grade students attending a high-minority, high-poverty urban school; therefore, population validity was a threat because findings could only be generalized to similar groups.

Ecological validity. An important component to most quantitative research studies (Onwuegbuzie, 2000) or the quantitative phase of mixed methods research studies, ecological validity refers to application of findings across variables, such as changing the circumstances, the environment, or the framework. Applying the findings across variables establishes the resultant data as independent of the setting. Ecological validity can occur

at the research design/data collection or data interpretation stage (Benge, Onwuegbuzie, & Robbins, 2012). Because this study took place in a Title I, urban area school district which had high-poverty, minority participants, ecological validity was a threat.

Specificity of variables. Generalizations of study findings cannot be made when variables are deemed exclusive to the research study. These variables could include: (a) participants, (b) setting, (c) context, (d) duration, (e) independent variable definition, (f) and/or types of instruments used (Benge et al., 2012). Specificity of variables threat can transpire at the research design/data collection or data analysis stage. The population variables of high-poverty, minority students in an urban environment, Tool for Real-time Assessment of Information Literacy Skills ([TRAILS], 2016), the online information literacy assessment instrument, and researcher created interview questions employed in this study, were unique. This uniqueness rendered study findings as not generalizable.

Quantitative phase – internal validity. Internal validity refers to the causal relationship inferred by the researcher between study variables (Onwuegbuzie, 2003; Onwuegbuzie & Leech, 2007b). Internal validity threats that might occur in the quantitative phase are: (a) maturation, (b) researcher bias, and (c) behavior bias. Each of these threats is discussed in the following sections.

Maturation. The threat of maturation occurs when the participant allows time to elapse between the study's implementation and completion. This time lapse can create variations intellectually, mentally, or physically precipitating emotions akin to fatigue, boredom, or motivation incorrectly attributable to the independent variable (Benge et al., 2012). This is a threat I was not be able to control. Thus, maturation was a limitation of this study, and this threat arose during the research design/data collection stage due to the

various circumstances such as Hurricane Harvey closing school and other delays to start data collection.

Researcher bias. Research bias can occur in the research design/data collection stage and/or the data analysis stage. When researcher bias occurs in the quantitative phase, the researcher's values and characteristics have tarnished data. These data might be considered not reliable. The data collection process might be tainted if the bias affects participants (Benge et al., 2012). As a researcher, my responsibility was to remain as objective as possible despite the importance of the subject matter to me. All participants were treated equally during data collection, and none of the participants were assisted in any way.

Behavior bias. Behavior bias can transpire at the beginning of a study if the participant has an intense inclination or disinclination to the study instrument implementation (Benge et al., 2012). Behavioral bias can occur at the research design/data collection stage. This threat occurred at the outset. When initially seeking participants, the TRAILS instrument was described as 30-multiple choice questions. However, changes to the assessment had occurred, unbeknownst to the researcher, increasing the TRAILS assessment to 45-questions. This change was noticed and commented upon by the initial group of participants.

Qualitative phase – external credibility. External and internal credibility threats can also develop within the three stages of the research process in the qualitative phase: (a) research design/data collection, (b) data analysis, and (c) data interpretation. According to Onwuegbuzie and Leech (2007b), “external credibility pertains to the confirmability and transferability of findings and conclusions” (p. 235). External

credibility threats presented during the study are: (a) researcher bias, (b) interpretive validity, and (c) reactivity (Benge et al., 2012). Each of these threats is discussed in the following sections.

Researcher bias. Because the researcher was the instrument by which data were collected, researcher bias might occur unintentionally, contaminating data collection in altering participants' behaviors or experiences. Researcher bias might passively affect legitimation via researcher attributes, such as the researcher's clothing worn, the researcher's ethnicity, or the researcher's gender (Onwuegbuzie, 2003). Other forms of researcher bias are a priori knowledge of the participant and researcher mannerisms. Researcher bias can occur during the data collection, analysis, and/or interpretation stages. To help eliminate the threat of researcher bias, I participated in a debriefing session in which I was digitally interviewed by a neutral party, allowing for reflexivity of my participant interviews. Questions asked were: a) In what ways did knowing something about your interviewee advance, enhance, or distract from the interview and the interpretation process?; (b) What findings surprised you?; and (c) To what extent do you think your own empathy and insights of the participants evolved during the course of the interviews? To reduce researcher bias during analyses and interpretation of data, a qualitative software program was used to code and to categorize data to determine themes.

Interpretive validity. Interpretive validity refers to the ability to interpret the participant's meaning as the meaning intended (Maxwell, 1992). By analyzing the interviewees' words verbatim, I gained perspective and intentions to construct meaning

accurately and credibly. In addition, my debriefing process permitted reflexivity and impartiality.

Reactivity. Reactivity might occur when the participant alters her/his response due to awareness of participating in a research study (Onwuegbuzie, 2003). This was a possible threat because any of the students might want to illuminate their responses more positively. However, the researcher advised participants of their anonymity throughout the study and engaged participants to member check their transcribed interview for correctness.

Qualitative phase – internal credibility. Internal credibility is characterized as, “the truth value, applicability, consistency, neutrality, dependability, and/or credibility of interpretations and conclusions within the underlying setting or group” (Onwuegbuzie & Leech, 2007b, p. 234). An example of internal credibility threats taking place throughout the research process of the qualitative phase of the study are; (a) descriptive validity, (b) observational bias, (c) confirmation bias, (d) voluptuous validity, and (e) reactivity. Each of these threats is discussed in the following sections.

Descriptive validity. Descriptive validity indicates accuracy and adequacy of what the participant has expressed verbally and non-verbally (Maxwell, 1992). The validity of the transcript is based on it being verbatim, inclusive of emotions. The data must reflect accurately and adequately the participant’s volume, pitch, and voice quality. This threat was addressed by audio and video recording interviews in order to capture accurate responses. This threat was also addressed in the member checking session.

Observational bias. This bias occurs when insufficient data are collected by the researcher. Observational bias can occur at the data collection or data analysis stage. At

the data collection stage and data analysis stages, the threat to credibility is represented by an inadequate sampling of participant words or behaviors collected and/or analyzed, respectively (Onwuegbuzie, 2003). Observational bias transpires when there is not protracted engagement of the participant (Lincoln & Guba, 1985). Observational bias was eliminated by scheduling 30-minute individual interview sessions and arranging follow-up questions for clarification.

Confirmation bias. As a result of having *a priori* knowledge of the information literacy skills students should possess and having had previous interaction with some of the students, confirmation bias was a viable threat to internal credibility. Confirmation bias occurs when assumptions and conclusions are based on previous information of a participant, and not thorough data interpretation *a posteriori* (Benge, et al., 2012). To avoid confirmation bias, I allowed themes to emerge from the data naturally.

Voluptuous validity. The researcher, embracing self-reflexivity of her/his knowledge base of the assimilated data is the criteria for this validity (Onwuegbuzie & Leech, 2007b). By employing a debriefing procedure, I was able to reflect on my role as the researcher and not as a librarian who teaches information literacy to high school students. Thereby, as a researcher, I concentrated on interpreting and producing accurate and credible data.

Mixed methods legitimization. Onwuegbuzie and Johnson (2006) presented various legitimization concerns in mixed methods research relating to integration of quantitative and qualitative data. Also, researchers state legitimization is not merely an outcome; it is perceived as a process, as well. Legitimizations appearing during the mixed

methods phase of this research are: (a) sequential legitimation, (b) weakness minimization legitimation, and (c) multiple validities legitimation.

Sequential legitimation. Onwuegbuzie and Johnson (2006) asserted sequential legitimation is threatened by how much meta-inferences are reduced when reversing quantitative and qualitative phases. Meta-inferences resulting from mixed data should be of quality, mitigating the effect of mixing stronger and weaker inferences from each phase (Onwuegbuzie & Johnson, 2006). This study is a sequential quantitative – qualitative study, and careful attention was paid to inferences made from each phase in order to lessen the sequential legitimation threat.

Weakness minimization legitimation. This legitimation is optimized in mixed methods research because the researcher methodically designs the study (Onwuegbuzie & Johnson, 2006). The researcher, however, was responsible for assessing how the strengths of one phase compensates for the weaknesses of the other, and plans the study accordingly (Onwuegbuzie & Johnson, 2006). Weakness minimization was addressed when the researcher analyzed and interpreted the results, producing a high-quality meta-inference by consciously combining a weak inference from one phase with a strong inference from the other.

Multiple validities legitimation. According to Onwuegbuzie and Johnson (2006), this legitimation presents itself in most mixed methods research studies. Multiple validities legitimation refers to addressing all validities in each research phase—quantitative, qualitative, and mixed. Threats to multiple validities were addressed as noted in the above quantitative and qualitative threats to external and internal validity and credibility.

Assumptions

A primary assumption was participants would complete the information literacy assessment both honestly and thoroughly. Additionally, the researcher assumed the data the assessment yielded were credible, based on its documented tested reliability and validity. Lastly, an assumption was that researcher produced instruments, such as qualitative interview questions, produced trustworthy data. If any of these assumptions was not satisfied, resultant data were not accurately collected and reported. I gained participants' trust by assuring them confidentiality was of utmost importance, and care was taken to ensure their anonymity, encouraging them to respond openly and honestly. Also, the researcher advised the participants the assessment was not timed nor reported as a grade, and they were encouraged to do their best.

Organization of Study

Provided in Chapter I was information establishing the foundation of the study, which included the background of the study, statement of the problem, methodological framework, educational significance, research questions, research hypotheses, conceptual framework, theoretical framework, definition of terms, research questions, delimitations, limitations, along with overall organization of the study. Prevailing literature and research methodology comprises the subsequent two chapters. Chapter II encompasses extant literature regarding comprehensive schools, the history of information literacy and its evolution, in concert with literature on the associative skills required to be information literate and prevailing reasons for not being information literate. Moreover, information literacy skills requirements for employment after graduation or for college and career readiness, and teacher/librarian collaborations within and between secondary and

postsecondary institutions to increase readiness are reviewed. Research methods, inclusive of participants, sampling scheme, instruments, procedures, and data analyses are delineated in Chapter III. Chapter IV describes findings and analysis of data, and Chapter V is a discussion of findings.

CHAPTER II

Review of Related Literature

Research for this chapter represents literature defining, supporting, and encouraging use of information literacy in secondary and postsecondary education. A close examination of the literature helped me understand how high-poverty, minority students attain and retain information literacy skills proficiency upon high school graduation. Moreover, practitioners might be able to resolve any problems arising during instruction in preparing students for the job market or college and career readiness through understanding of the provided literature. The literature reviewed for this mixed methods study includes topics, such as: (a) how comprehensive schools developed; (b) how information literacy has evolved; (c) why information literacy is important in secondary and postsecondary institutions; (d) what information literacy assessment studies reveal; (e) what are high school instructional practices and college expectations; (f) who can affect student proficiency; and (g) how sociocultural factors and socioeconomic status affect high school students.

Organization of Literature Review

The review of literature employs Onwuegbuzie and Frels (2016) *Seven Steps to a Comprehensive Literature Review*. The comprehensive literature review utilizes non-linear and recursive steps to flesh out supporting literature, while engaging in a transparent method of presenting research (Onwuegbuzie & Frels, 2016). These steps are as follows:

- Step 1: “Exploring Beliefs and Topics”
- Step 2: “Initiating the Search”

- Step 3: “Storing and Organizing Information”
- Step 4: “Selecting/deselecting Information”
- Step 5: “Expanding the Search—Media, Observation(s), Documents, Expert(s), and Secondary Data (MODES)”
- Step 6: “Analyzing/synthesizing Information”
- Step 7: “Presenting the CLR report” (Onwuegbuzie & Frels, 2016, p. 58)

After following these 7-steps, the specific headings presented in this review of the literature are: (a) comprehensive schools; (b) evolution of information literacy; (c) information literacy in the 21st century; (d) information literacy significance; (e) high school information literacy readiness and college expectations; (f) information literacy instruction; (g) assessing information literacy skills and research skills; (h) instructional collaborations in building information literacy skills; (i) sociocultural factors and information literacy instruction; and (j) high-minority, high-poverty school characteristics. A summary will conclude this chapter.

Adhering to the Seven Steps of a Comprehensive Literature Review

Step 1: Exploring beliefs and topics. Onwuegbuzie and Frels (2016) denoted, in order to present a comprehensive literature review, the first step is to consider our social and cultural belief systems based on our past life experiences. Greene (2006) postulated four areas relate to the study of human beings. The first area is associated with one’s core philosophical or epistemological beliefs. As noted in Chapter 1, epistemologically, my worldview is culture and family of low-socioeconomic status, minority students influences the learning of information literacy skills. Figure 2 represents the researcher’s worldview—intrinsic beliefs, combined with intrinsic truths equates to knowledge.

Axiologically, I value education and learning for all, and I value my learning and the ability as a practitioner to share those skills with students. By working in a low-socioeconomic school district comprised of predominately Hispanic and African American students, I aspire to incorporate my pedagogical knowledge and value systems as a teacher-librarian, to inform our students on how to obtain knowledge using information literacy skills to help them become successful societal contributors. By researching the information literacy skills proficiency of students in my selected school and district, I hoped to gain a better sociocultural understanding of an instructional methodology for teaching information literacy.

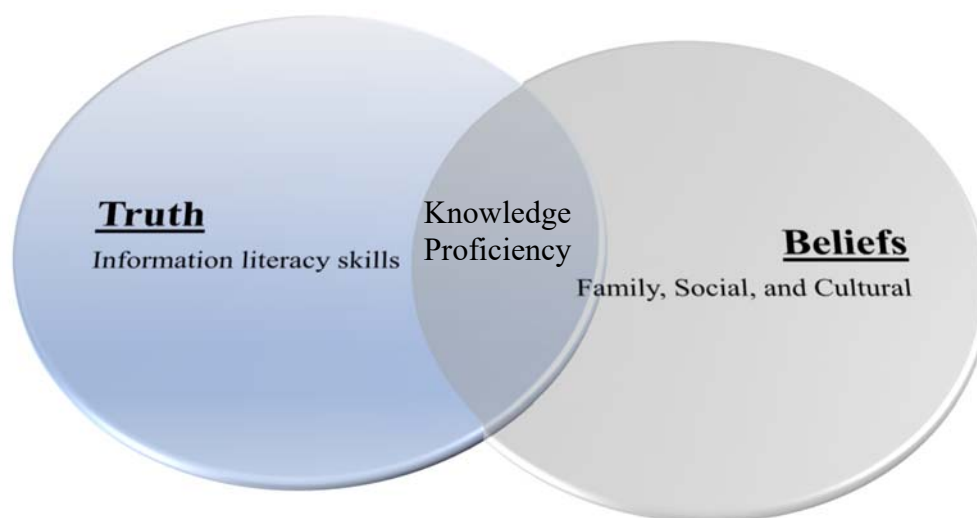


Figure 2. Relationship between truth and beliefs. This figure illustrates the relationship between what one perceives as truth--information literacy skills, and student's beliefs—family, social, and culture equates to knowledge received.

Step 2: Initiating the search. The next step in creating a comprehensive literature review involved multiple undertakings (Onwuegbuzie & Frels, 2016), which

included; (a) selecting pertinent databases for topic, (b) initiating a search of topic literature, (c) examining extant topic material, (d) identifying key words for topic searches, and (e) refining topic searches. These steps helped the researcher create an audit trail, documenting the review of literature process and illuminating the “literature reviewer as an original and critical thinker who inspects and reflects on all aspects of the process and product” (Onwuegbuzie & Frels, p. 86). In adhering to step 2, initially I selected the following databases, as indicated by Table 1, to conduct related article searches; (a) Education Resources Information Center (ERIC), (b) Library & Information Science Source, and (c) Information Science and Technology. After selecting the databases, I initiated my search using Boolean terminology on my selected topic of information literacy and college and career readiness of graduating secondary students. I elected Full-Text and Peer Reviewed as limiters for returned articles. Examining extant literature encompassed reading the article abstracts to determine if they were viable for the study; and this action precipitated further identification of key words yielding additional refined literature.

Table 1

Literature Search Results

Key Words	Search Mode	Number of Hits	Search Source	Limiters	Sampling of Abstracts
information literacy (abstract) AND "high school" (open)	Boolean/Phrase	57	ERIC	Full text Peer reviewed	45
information literacy (abstract) AND skills (open) NOT elementary (Open)	Boolean/Phrase	462	ERIC	Full text Peer reviewed	155
information literacy (abstract) AND library or librarian (open) AND secondary (open)	Boolean/Phrase	187	Library & Information Science Source	Full text Peer reviewed	115
"information literacy" (abstract) AND library (open) AND high school (open)	Boolean/Phrase	38	Library & Information Science Source	Full text Peer reviewed	38

Note. This table represents a sample of databases searched by the researcher and ensuing results.

Step 3: Storing and organizing information. According to Onwuegbuzie and Frels (2016), literature should be stored and organized using a system that works best for the researcher. Suggestions include basic storage, such as notecards, spreadsheets, and research management software programs. In organizing my reference sources, I created a *Summary Table of Literature* spreadsheet documenting pertinent article information such as: (a) Article Title; (b) Article Authors; (c) Publication Year; (d) Type of Article; Method—Qualitative, Quantitative, or Mixed Methods; (e) Abstract; (f) APA Citation; (g) Select/Deselect; and (h) MODES-Media, Observations, Documents, Experts,

Secondary Data. Additionally, I used Mendeley Desktop and Mendeley Web-based Reference Management System to store and organize my literature. With Mendeley as my organization tool, I categorized my studies into topical literature review subheadings, emphasized material by highlighting significant information of each article, and used the notes section to store important literature data.

Step 4: Selecting and deselecting information. In this fourth step, the researcher determined the studies viability in supporting the topic based on three criteria, “(a) sound argument, (b) evidence, and (c) consequences” (Onwuegbuzie & Frels, 2016, p. 157). In selecting and deselecting articles for my literature review, I first rewrote the abstract to get a better understanding of how this information applied to information literacy skills. Afterward, I selected and deselected studies, noting on my spreadsheet the reasoning behind the decision. Once decisions were completed, I searched the Sam Houston State University (SHSU) online databases using the article title, downloaded the article, and subsequently added the article to the Mendeley reference manager.

Step 5: Expanding the search MODES. To produce a comprehensive literature review beyond gathering previous literature, the researcher should expand the search to include various data formats (Onwuegbuzie & Frels, 2016). These formats included using one or more of the following MODES: (a) Media—incorporating audio or video recordings; (b) Observation(s)—direct observation of topic concepts; (c) Documents—using dissertations and theses, government documents, or blogs; (d) Expert(s)—interviewing well-cited authors; and (e) Secondary data—analyzing already used or raw data. In discovering research for this review of literature, I uncovered several MODES to incorporate. For media, I located a video discussing media literacy in the classroom, a

video on teaching information literacy, and a video suggesting the best website for teaching and learning information literacy skills. For observations, I observed teachers working with students on research papers and helping students navigate databases. Additionally, I observed students using information literacy skills during research projects, many preferring to use Google above school databases, in many instances. My documents included a dissertation validating the reliability of the TRAILS information literacy assessment and information literacy standards literature from the ALA website.

Step 6: Analyzing and synthesizing information. Onwuegbuzie and Frels (2016), continued in step 6 of their 7-step process for conducting a comprehensive review of literature, by defining the difference between analyzing and synthesizing information, and dictating various methods for accomplishing each. Examining a summary of the literature documented on my Excel spreadsheet, I initially analyzed the literature abstracts and printed articles directly pertaining to my subheadings. Secondly, I reviewed the method section, conclusion/results, and references of the studies, and categorized each study into the appropriate topic heading or subheading, both in print and in the Mendeley software program. Thirdly, I created an outline with my topic headings and subheadings and included at least two APA citations to support each heading and subheading.

Step 7: Presenting the CLR report. After the completing Steps 1-6 iteratively, the researcher determined how the comprehensive literature review was presented (Onwuegbuzie & Frels, 2016). Using the acronym “AVOW—act, visualize, orally present, and write”—(Onwuegbuzie & Frels, 2016, p. 280), suggested inventive ways the comprehensive literature review can be delivered. For this study, my delivery was

disseminated via writing. In the writing plan, Onwuegbuzie and Frels recommend the following tasks: (a) “Determine the goal;” (b) “Determine the intended outlet;” (c) “Determine the intended audience;” (d) “Revisit belief systems;” and (e) “Create an outline” (pp. 280-281). The goal of this comprehensive literature review was primary research to support the outlet of my dissertation research study. The intended audience included, but was not limited to, professors, administrators, colleagues, peers, and students. My belief systems, as noted earlier, manifested themselves via the literature selected and presented in the created outline representing significant key word topics and subtopics, as presented below.

Comprehensive Schools

The history of traditional high schools and curriculum standardization can be traced back as far as 1893, when the National Education Association (NEA) appointed a committee of college presidents to develop a college preparatory curriculum for secondary students (Mirel, 2006). Charles Eliot, President of Harvard University and leader of The Committee of Ten, framed their final report documenting every subject taught in high school should be taught at the same higher academic level to all students regardless of their path upon graduation (Mirel, 2006). However, as demographics in the United States began to vary in the early 20th century, another group under the NEA umbrella, the Commission on the Reorganization of Secondary Education, filed a report in opposition of The Committee of Ten’s proposal (Mirel, 2006). The Commission on the Reorganization of Secondary Education in its report, *Cardinal Principles of Secondary Education*, declared school curricula should be diverse to accommodate the differences in students’ abilities because the commission did not deem all students to be

college material (Mirel, 2006). Subsequently, vocational studies were added to the traditional secondary schools to formulate a comprehensive high school, inclusive of academic and vocational studies; thereby, catering to all student levels—from high school to workforce through to college and career (Wraga, 1998).

Evolution of Information Literacy

Paul Zurkowski (1974) signified information literacy as an important program objective, and libraries and librarians integral components of that program. Zurkowski (1974) declared *information literates* are those who “have learned techniques and skills for utilizing the wide range of information tools, as well as primary sources in molding information solutions to their problems” (p. 6). All others, Zurkowski (1974) identified as *information illiterates*, declaring the following: “While the population of the U.S. today is nearly 100% literate, only a small portion—perhaps one-sixth, could be characterized as information literates” (p. 7).

During the 1970s, bibliographic databases started emerging to what is now considered the precursor to contemporary digital resources (Cowan, 2014). According to Cowan (2014), these initial databases required the assistance of a librarian, who was considered the expert in maneuvering through this new technology in bibliographic instruction. In the 1980s, non-intuitive instruments, such as CD-ROMS and early online databases, demanded the patron to remember operations to open, to search, to print and/or to save data. Cowan (2014) asserted, “These new methods of searching were a kind of grammar of research, without which the researcher would remain functionally illiterate with regard to seeking certain types of information, mostly academic” (p. 25). Cowan

conceded emerging search methods compelled the researcher to utilize new vocabulary and typing commands such as enter, return, and mouse clicking.

By the 1990s, more research was conducted online via the Internet and, subsequently, research courses were added to curricula across the United States. Librarians were again at the center of this continued evolution in demonstrating to students how to unearth information by mining various academic databases in search of credible resources (Cowan, 2014). The 21st century brought with it a new information age and a plethora of new databases and online resources. The ACRL group of the ALA asserted students are unable to learn everything they need to know in their discipline within a few years of school (ACRL, 2000). Therefore, being information literate allowed students to engage in critical thinking skills, enabling students to search for information; thereby, empowering students to become life-long learners (ALA, 2013). Table 2 displays information literacy definitions through the years.

Table 2

Information Literacy Definitions through the Years

Author/Organization	Definition
Zurkowski (1974).	People trained in the application of information resources to their work can be called information literates.
Burchinal (1976, p. 11).	"To be information literate requires a new set of skills. These include how to locate and use information needed for problem-solving and decision-making efficiently and effectively."
ALA (1989, p. 1)	"To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information"
Doyle (1994, p. 40)	"Information literacy is the ability to access, evaluate and use information from a variety of sources, to recognize when information is needed, and to know how to learn"
ACRL (2000, p. 2)	"Information literacy is a set of abilities requiring individuals to "recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information." Information literacy, on the other hand, is an intellectual framework for understanding, finding, evaluating, and using information - activities which may be accomplished in part by fluency with information technology, in part by sound investigative methods, but most important, through critical discernment and reasoning. Information literacy initiates, sustains, and extends lifelong learning through abilities which may use technologies but are ultimately independent of the learner"

(continued)

Author/Organization	Definition
Horton (2008, p. 53)	“Information literacy means the set of skills, attitudes and knowledge necessary to know when information is needed to help solve a problem or make a decision, how to articulate that information need in searchable terms and language, then search efficiently for the information, retrieve it, interpret and understand it, organize it, evaluate its credibility and authenticity, assess its relevance, communicate it others if necessary, then utilize it to accomplish bottom-line purposes”
Bruce (2008, p. 6)	“Information literacy is being able to draw upon different ways of experiencing the use of information to learn”
Lloyd (2010, p. 1)	“Information literacy is a socio-cultural practice, one that is embedded and interwoven through the practices that constitute a social field (i.e. a context) and as such is subject to collaborative arrangements and activities. It is constituted by a set of interwoven understandings that guide interaction and is linked to the activities around information and knowledge sanctioned by any given setting.”

Note. Reprinted [adapted] with permission from Information literacy as an important competency for the 21st century by S. Virkus, 2011, Journal of the Bangladesh Association of Young Researchers, 1(2), pp. 17-18.

Information Literacy in the 21st Century

In 1982, futurist John Naisbitt penned, ‘We are drowning in information but starved for knowledge’ (Naisbitt as cited in Breivik, 2005, p. 22). This sentiment is particularly apropos today because students are inundated with information from the Internet. Breivik (2005) asserted, “With the seductiveness of the Internet added to the

problem, it has become one of education's greatest challenges to teach students the skills needed to test the reliability, currency, and relevance of the information they find” (p. 22). Saunders, Severyn, and Caron, 2017 proclaimed in a Pew Research Center study, “middle and high school students conduct research almost exclusively through free online Web services” (p. 277). Google and online encyclopedias such as Wikipedia were used most often at 94% and 75%, respectively (Purcell, Brenner, & Rainie, 2012). When using online sources to uncover credible information, Horrigan and Gramlich (2017) posited 75% of Hispanic and 70% of Black students desired more training. Information literacy skills, in concert with technology competency, are essential subjects needing to be taught during K-12 years; however, Breivik (2005) contended students coming out of high schools are not prepared to conduct research.

Not only is information literacy seen domestically as an essential skill in the 21st century, but internationally as well. In 2003, information literacy experts from 23 countries and all continents, convened in Prague, and *The Prague Declaration: Towards an Information Literate Society* was drafted (UNESCO, 2003). The members declared an “Information Society” is important in edifying knowledge beginning with communities through to nations and from individuals upward to institutions. The representatives further acknowledged:

Information Literacy encompasses knowledge of one’s information concerns and needs, and the ability to identify, locate, evaluate, organize and effectively create, use and communicate information to address issues or problems at hand; it is a prerequisite for participating effectively in the Information Society, and is part of the basic human right of lifelong learning. (UNESCO, 2003, p. 1)

According to the declaration, governments are responsible for closing the digital divide by ensuring interdisciplinary courses encouraging information literacy are added to curriculums to produce citizens who are members of an information literate society and who are job market competitive (UNESCO, 2003).

Information Literacy Significance

Job market. According to Vansickle (2002), as students end their formal education in high school, whether pursuing degrees, careers, or job training, they most likely will rely on digital information in all aspects of their lives. This reliance underscores the point that information literacy proficiency is significant in processing the innumerable resources overwhelming students. Not understanding how to process academic sources ultimately influences students to utilize familiar sources for research projects, such as Google, as opposed to reliable sources (Head & Eisenberg, 2009). Additionally, O'Sullivan and Dallas (2010) examined the research process of high school seniors, and Asher and Duke (2012) yielded similar conclusions regarding college students' search strategies. Vansickle (2002) ascertained students might locate information, but not encompass the skills to recognize whether the information is credible and relevant. Despite digital accessibility, proficiency in using information literacy skills in the workplace has been called into question (Inskip, 2015). The difficulty lies in the transferability of skills from the school environment to the work environment (Inskip, 2015).

The 21st century has seen the evolution from a predominantly agricultural and industrial based economy to an information and service-based economy (Toffler, 1990), which requires employees with elevated skills (Hedrick, Homan, & Dick, 2015).

According to Hedrick et al. (2015), over fifty-percent of students entering the workforce directly from high school are lacking skills in oral and written communication and critical thinking and problem solving; thus, indicating young adults are ill-prepared to be successful in the labor market (Casner-Lotto & Barrington, 2006). Information literacy skills, the ability to locate, comprehend, and employ information, is required for a myriad of jobs (Weiner, 2011); and employees who are desirous and capable of learning these skills are important to companies hiring them (Salehudin, 2016).

College and career. Fifty percent of 21st century college students are forecasted not to graduate, in part, due to information literacy skill shortfalls (Carr & Rockman, 2003). In a ProQuest (2016) survey, over 84% of librarians responded they believe “information literacy affects graduation rates” and over 97% of librarians indicated “information literacy contributes to success in the workforce” (p. 1). Owen (2010) articulated five problems students have employing information literacy, which are: (a) general knowledge deficiency in that “students don’t know what they don’t know” (p. 21); (b) research topic and questions deficiency for not adhering to a research process; (c) web-search deficiency and lack of ability to conduct academic searches; (d) evaluating information non-critically using nonacademic over academic articles, and (e) using information inefficiently and lacking the ability to synthesize information. Conversely, a study of majority first-time college students’ assessment of information literacy skills yielded a strong relationship between honors courses—Advanced Placement, International Baccalaureate, and College Preparatory—studied in high school and information literacy skills competency (Fabbi, 2014). Smalley (2004) supported this

evidence, asserting some first-year college students are better prepared in utilizing information literacy skills than others.

High School Information Literacy Readiness and College Expectations

Since 1998 the ALA and American Association of School Librarians (AASL) have mapped out information literacy instruction for elementary and secondary students. This plan includes the *AASL Standards for the 21st Century Learner* published in 2007 as an instructional guideline for librarians teaching information literacy (Godbey, 2013). Despite AASL standards, high school librarians indicated many students have not acquired sufficient information literacy skills upon graduation (Islam & Murno, 2006). Godbey (2013) affirmed, “the gap between the skills expected from high school graduates and the skills actually demonstrated by entering college students reveals a need for substantial change in information literacy instruction...” (p. 3). Presented in Table 3 are the AASL standards, as well as corresponding student learning expectations via curriculum instruction by end of 12th-grade (AASL, 2007).

Table 3

American Association of School Library Teaching and Learning Standards

AASL Standard	What student is expected to know
1. Inquire, think critically, and gain knowledge	Develop and research a thesis statement Select the appropriate database for a specific information need.
2. Draw conclusions, make informed decisions apply knowledge to new situations, and create new knowledge	Use acceptable search strategies – Boolean, key words Use both divergent and convergent thinking to formulate alternative conclusions and test them against the evidence.
3. Share knowledge and participate ethically and productively as members of our democratic society	Use technology and other information tools to organize and display knowledge Conclude an inquiry-based research process by sharing new understandings and reflecting on the learning.
4. Pursue personal and aesthetic growth.	Seek information for personal learning in a variety of formats and genres Practice safe and ethical behaviors in personal electronic communication and interaction.

Note: Adapted with permission from Standards for the 21st century learner by AASL, 2007, Chicago, IL: American Library Association.

In 2017, the AASL arm ALA announced new standards, including the following learner framework:

1. INQUIRE: Build new knowledge by inquiring, thinking critically, identifying problems, and developing strategies for solving problems.
2. INCLUDE: Demonstrate an understanding of and commitment to inclusiveness and respect for diversity in the learning community.

3. COLLABORATE: Work effectively with others to broaden perspectives and work toward common goals.
4. CURATE: Make meaning for oneself and others by collecting, organizing, and sharing resources of personal relevance.
5. EXPLORE: Discover and innovate in a growth mindset developed through experience and reflection.
6. ENGAGE: Demonstrate safe, legal, and ethical creating and sharing of knowledge products independently while engaging in a community of practice.
7. This new framework is learner centered and concentrated on fostering critical thinking (AASL, 2017).

High school readiness. Varlejs and Stec (2014) declared even though complaints about lack of readiness of incoming freshmen persist, scant information on the reasons for the lack of readiness is available. In their study seeking explanations of the lack of information literacy readiness from high school to college, Varlejs and Stec (2014) researched incoming freshmen enrolled in a first-year course requiring use of library resources. The researchers examined research skills of the freshmen, utilizing their scores to determine the level of research skills transferred from high school. The respective school librarians were contacted to answer interview questions relating to class visitation and information literacy instruction of their former students. Librarians were not advised students were categorized based on high-group and low-group scores; however, librarians of students in the higher scoring group were able to elucidate more on class visitation schedules and library use of their students. Varlejs and Stec (2014)

related some school librarians distinguished between college-bound and noncollege-bound students regarding information literacy, but other librarians believed “planning for college was the rule rather than the exception” (p. 7). Neither socioeconomic nor language indicators could be regarded as a factor in most student results; however, some schools demonstrated a strong adverse relationship between English language learners and college planning (Varlejs & Stec, 2014).

College expectations. Demonstrating information literacy skills proficiency in college has not met with academic expectations of incoming students (Averill & Lewis, 2013). Moreover, academicians indicate students considered as “digital natives,” those native to the language of technology (Prensky, 2001), are in effect “digital illiterates” because of their inability to navigate primary and secondary information sources, instead relying on tertiary resources (Averill & Lewis, 2013). At the postsecondary level, many universities are requiring information literacy instruction (Averill & Lewis, 2013); yet, despite being digital natives, many students are not proficient in differentiating between types of resources, nor can they successfully evaluate credible and reliable sources (Islam & Murno, 2006). In their study, Islam and Murno (2006) assessed information literacy specialists/librarians at the secondary and postsecondary levels. After mapping the AASL instructional standards with the ACRL standards, Islam and Murno (2006) developed a survey to measure: (a) the most and least information literacy skills addressed in high school; (b) librarians’ perceptions of student information literacy skills; (c) barriers to proper information literacy instruction; and (d) how conducive library environments are to instruction. Islam and Murno (2006) posited the standard most taught was Standard Five, which deals with understanding access and use of information.

The standard least addressed was Standard Four, which focuses on efficient use of information, such as organizing and presenting content. Regarding librarians' perceptions of students' information literacy proficiencies, over 76% believed students had a positive or very positive attitude toward libraries and learning (Islam & Murno, 2006). Barriers to proper information literacy instruction were expressed in comments at the end of the survey, and the majority expressed administrators were not supportive of information literacy in schools. Ninety-nine percent of the librarians surveyed acknowledged their library was equipped with the Internet and over 90% of librarians indicated they had access to other technology and subscription databases (Islam & Murno, 2006).

Assessing Information Literacy and Research Skills

Information literacy skills assessment most often occurs at the postsecondary level because colleges and universities are more financially attached to implementing information literacy curricula for which they must account for fiscally (Connor, Radcliff, & Gedeon, 2001). When employing information literacy skills, research performed at California State University confirmed information literacy assessments and information research skills provide students with the requisite strategies for student improvement and confidence (Dunn, 2002). Results from the study revealed upper-class students clearly evaluated resources for context and content, and implemented strategies in their research paradigm. Contrariwise, Haglund and Herron (2008) administered a library anxiety test in concordance with an information literacy assessment to incoming freshmen. Their findings indicated a difference level between high-achieving and low-achieving students; however, study results suggested "that many students could be information illiterate"

upon entering college (p. 50). In addition, Haglund and Herron (2008) discerned lower skilled students exhibited exaggerated perceptions of their abilities, and they postulated opposite perceptions for higher skilled students. There was no indication library anxiety affected the assessment results (Haglund & Herron, 2008).

Gross and Latham (2007) similarly researched student self-assessment of their information literacy skills in conjunction with library anxiety. In their study, Gross and Latham (2007) employed the competency paradigm, which theorizes students' self-assessments will be greater than their actual skill levels. Their findings, comparable to those of Haglund and Herron (2008), did not yield a connection between self-assessment and library anxiety; however, the findings supported the competency theory, in that the dichotomous relationship between self-assessment and skill level emerged.

Kohrman (2003) theorized higher education students are "woefully unprepared for the high level of technology found in postsecondary academic libraries today" (p. 1). Research encompasses more than Internet skills; it requires research proficiency as well. Many students are familiar with school computers and use them; yet, confidence falters for some students when employing computers for research (Kohrman, 2003). Many researchers implicated library anxiety, or fear of computers, as the culprit (Ayersman, 1996; Rosen, Sears, and Weil, 1987). Kohrman (2003) cited Onwuegbuzie and Jiao's (2000) procrastination study, affirming library anxiety related to fear of failure and also to correlated students' postponement of performing research to perceived barriers they had with library staff and library comfortability. Kovalik, Yutzey, and Piazza (2012) ascertained, by surveying high school seniors on their application of information literacy skills for research projects, students indicated they were able to locate information

utilizing library resources. However, participants noted they needed assistance in determining the best sources and in evaluating resource material (Kovalik et al., 2012).

Instructional Collaborations in Building Information Literacy Skills

The number of students transitioning from high school to college has significantly increased over the last several years, resulting in a need for adequate preparation at the secondary level for transitioning students to be prepared for higher education (Godbey, 2013). Collaboration between school libraries and university libraries is an integral piece in student preparation, and has been since the later part of 1980, when universities formed partnerships with area schools (Borthwick, 2001). Throughout the past several years, library and information literacy standards have been published (Godbey, 2013); nonetheless, a gap exists between “skills expected from high school graduates and the skills actually demonstrated by entering college students” (Godbey, 2013, p. 2). Because of the gap between knowledge and skill, Hull and Taylor (2003) proposed changes in information literacy skills instruction and additional communication between secondary and higher education schools. Callan and Kirst (2008) declared, “Perhaps one of the reasons for the skills gap between high school and college is the fact that student standards are established in separate orbits. K-16 faculty members rarely work together on standards, curricula or assessment” (p. 3).

Kersh and Masztal (1998) analyzed collaboration studies of K-12 and university partnerships enduring for a minimum of three years, and documented what makes a successful collaboration. To help ensure a positive collaboration there should be: (a) clearly defined goals, (b) detailed leadership design, (c) equally shared relationship, (d) total commitment from partners, (e) administrative assistance, (f) program evaluation,

and (g) reciprocal communication (Godbey, 2013). Not only is it important for K-12 school librarians maintain successful collaborations with postsecondary librarians to assist students transitioning to college, but collaborations between high school teachers and high school librarians are equally essential for effective instruction of information literacy skills (Islam & Murno, 2006).

Sociocultural Factors and Information Literacy Instruction

Vygotsky (1978) posited there is a relationship between learning and development, unlike other theorists who postulated learning and development occurred dichotomously. Hypothesizing, "Learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers... (Vygotsky, 1978, p. 90), the Russian psychologist advanced the idea of the zone of proximal development. The ZPD is, "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance, or in collaboration with more capable peers" (Vygotsky, 1978, p. 86).

John-Steiner and Mahn (1996) attested to Vygotsky's theory of ZPD, when they postulated students who bring their own culturally developed knowledge and values to the classroom transform the class into one that is more participatory and supportive with group exploration. Being aware of cultural backgrounds in education is important because teachers can employ cultural information within lesson activities (Blas, 2014). Interweaving student cultures into the classroom promotes sociocultural literacy benefitting both teacher and student (Blas, 2014).

A sociocultural literate librarian can assist students in identifying topical information, by instructing classes of various backgrounds to select subjects that can be seen as controversial to society, but not offensive to another culture (Blas, 2014).

According to Blas (2014):

Using several topics that do not offend any cultural beliefs will allow students to explore other cultures as they learn about the method of research. Knowledge of culturally important beliefs is critical when introducing possible topics to research. Sociocultural literate educators can identify safe, interesting, yet still controversial topics as research questions for classroom examples to minimize distraction without crossing a taboo. (p. 38)

Wells (2008) declared students learn best when their comfortability is challenged on cultural issues.

According to Wang, Bruce, and Hughes (2013), “growing attention is being given to the principles of sociocultural theories and their application to IL research in community, workplace, and school contexts...” (p. 297). Wang et al. (2013) continued, by asserting information literacy is entrenched within the sociocultural lens of various societies, and it is imperative as educators we understand community protocols in order to become efficient teachers of information literacy (Tuominen, Savolainen, & Talja, 2005). According to Johnson (2009), no segregation exists between cognitive development and the social, cultural, and historical frameworks from which they develop. Vygotsky (1978) affirmed learning is developed via two avenues, interactively between the learner and social interactions, and interactively within learners themselves.

High-Minority, High-Poverty School Characteristics

As U.S. demographics continue to shift, underprivileged and minority young adults will spearhead a decline in education levels and income levels of the U.S. job market (Greenhow, Walker, & Kim, 2009). In 2001, NCES, indicated high-poverty students have a lower high school graduation rate and lower college admission rate than higher-income students (NCES, 2001). Moreover, the NCES suggested high-poverty, minority students need more academic and social advocacy than higher-income students (Greenhow et al., 2009).

Becker indicated a disparity when employing information and communication technologies between high socioeconomic status students and low-socioeconomic Black students and Hispanic students. Greenhow et al. (2009) described problems of online connection speed, technology access and support, and teachers' technology prowess as reasons students might not use technology effectively and efficiently for course projects in low-socioeconomic areas. American Association of School Librarians (2011) conducted a national survey of urban librarians to ascertain strategies and resources to recommend to schools with high-poverty, minority students. Fifty-one percent of librarians responded that 80% of their students qualify for free or reduced-rate lunch, and 56% of respondents noted that at least 80% of their students were non-white. American Association of School Librarians (2011) asserted, "Urban school librarians serve a disproportionately high number of minority students" (p. 2).

Palardy, Rumberger, and Butler (2015) conducted a study investigating socioeconomic, racial, and linguistic school segregation. Palardy et al.'s (2015) study was based on the premise, "American high schools are highly segregated by race/ethnicity, socioeconomic status, and English language status" (p. 1). Due to these

factors, minority and low-socioeconomic students' actions and academic performances are adversely affected because of the tendency for poor Hispanic students and poor Black students to attend segregated schools (Palardy et al., 2015).

Summary

As noted in the literature reviewed, the meaning of what information literacy is and what it means to be information literate has evolved over the years. Research indicates, for varied reasons, short-falls exist in literacy skills of graduating job searchers and of students seeking higher education. Nevertheless, this research may help eradicate these deficits, by determining relationships between knowledge assessment and perceptions of information literacy skills and utilization levels of students at these diverse levels of achievement. By analyzing student assessments and student perceptions, insights into the best method of instruction for this particular demographic might be revealed. Additionally, the review of literature demonstrates collaboration between school librarians and teachers and secondary librarians and postsecondary academic librarians are opportunities to remedy shortfalls in information literacy skills. These collaborations offer an opportunity to better prepare students regardless if they are entering the job market immediately after high school graduation or matriculating into postsecondary education.

The research in this study, assessing knowledge and perceptions of information literacy skills, may add to the knowledge base of uncovering best practices to develop skill levels. These skills are important for poor, minority students, who are at different academic levels, to grasp when researching job markets or for being college and career ready. Being information literate allows individuals to think critically about the

information they confront, enabling them to evaluate it independently, which; therefore, empowers them to govern their own educational development in becoming lifelong learners.

Research presented in Chapter II encompassed: (a) comprehensive schools; (b) evolution of information literacy; (c) information literacy in the 21st century; (d) information literacy significance; (e) high school information literacy readiness and college expectations; (f) information literacy instruction; (g) assessing information literacy skills and research skills; (h) instructional collaborations in building information literacy skills; (i) sociocultural factors and information literacy instruction; and (j) high-minority, high-poverty school characteristics. A summary concluded this chapter. Chapter III provides an explanation of mixed methods methodology, including; (a) sampling framework, (b) research designs, (c) research instruments, (d) research procedures, and (e) data analysis.

CHAPTER III

Method

Introduction

In this mixed methods research study, survey data and interview responses were collected to provide comprehensive data analyses of participant assessments and participant perspectives on information literacy knowledge (Creswell, 2002). Johnson and Onwuegbuzie (2004) indicated the design strength of doing mixed methods research is how pictures and texts can significantly support the figures. In contrast, numbers can add precision to support pictures and texts (Johnson & Onwuegbuzie, 2004).

Additionally, conclusions can be stronger via integration and validation of evidence, and weaknesses of each data type can be minimized as a result of data convergence. Previous studies relating to this subject focused primarily on first-year postsecondary students who lacked proficiency in information literacy skills for college research (Averill & Lewis, 2013; Smith et al., 2013; Varlejs & Stec, 2014). Moreover, scant literature exists offering insight into high-poverty, minority students in an urban metropolitan environment vis-à-vis utilization of information literacy skills for job market and college and career readiness upon graduation. In this research, requisite information literacy skills for 12th-grade students were evaluated for post-secondary job market and college and career readiness. In addition, student perceptions of information literacy skills required for job market and college and career readiness were examined.

The methodological framework for this study continues to follow Collins, Onwuegbuzie, and Sutton's (2006) 13-steps for mixed methods research with the Planning Stage: Step 6 and Step 7, and the first step of the Implementation Stage: Step 8.

As a review, Chapter I began with the first 5 steps: (a) stating the mixed goal of the study; (b) identifying the mixed research objective; (c) determining the rationale for utilizing a mixed methods design, as well as the study rationale; (d) recognizing the purpose for the study, along with the purpose for employing quantitative and qualitative methods; and (e) detailing the quantitative, qualitative, and mixed research questions.

This chapter begins with a review of the research questions and hypotheses, followed by Step 6 and Step 7—the mixed methods sampling design and the mixed methods research design, respectively. The mixed methods sampling design includes a description of population and participants and describes the sampling scheme and research design in the quantitative phase and in the qualitative phase. Additionally, ethical considerations are explained for each. Step 8—the data collection process follows. The data collection process includes descriptions of the quantitative instrument, implementation procedures, and data analysis method. An overview of the qualitative instrument, implementation procedures, and data analysis process ensues. Chapter III concludes with a description of the mixed methods data analysis procedure and chapter summary.

Step 5: Research Questions

Quantitative research question. The following quantitative research question addressed high-poverty, minority secondary students' scores on an information literacy skills assessment in comparison to grade-point average.

To determine if a correlation was present between information literacy skills proficiency and academic achievement, as measured by GPA of 12th-grade high school students in a diverse school setting, the following research question was explored:

What is the relationship between knowledge of information literacy skills and academic achievement among 12th-grade students in a traditional comprehensive school?

Qualitative research questions. The following questions were addressed after the quantitative phase by selected participants based on scoring criteria:

1. What are the perceptions of 12th-grade students in a traditional comprehensive school regarding obtaining information literacy skills for job market or for college and career readiness?
2. How have sociocultural (e.g., family, social, cultural) factors influenced the perceptions of information literacy skills needed for job market or for college and career readiness?

Mixed methods research question. The following mixed methods research question was addressed to reveal a deeper understanding of the connection between the assessment and the perceptions:

According to Bandura's (1971) three key concepts, children learn by observing, children need a sense of accomplishment, and children's behavior change is not an indicator of learning. Integrating these three concepts, what is the relationship between perceptions of two groups of students; specifically, 12th-grade higher-achieving and 12th-grade lower-achieving students' information literacy skills and their information literacy assessment proficiency?

Quantitative Research Hypotheses

The following two quantitative hypotheses were tested in this study:

1. A relationship exists between knowledge of information literacy skills and academic achievement among 12th-grade students in a traditional comprehensive school;
2. A difference exists in information literacy knowledge between higher-achieving and lower-achieving 12th-grade students in a traditional comprehensive high school on an information literacy assessment.

Step 6: Research Sampling Design

Continuing with Step 6 of the 13 steps, Sampling Design includes information on sample size, sampling scheme, and sample characteristics. According to Onwuegbuzie and Collins (2007), mixed methods sampling designs can be grouped by time orientation, such as if the components occur sequentially or concurrently, and by the relationship between the quantitative and qualitative samples, such as, if the samples are: (a) identical—the same participants are in each study component; (b) parallel—participants in quantitative and qualitative stages are different; however, one is drawn from the other; (c) nested—participants in one phase of the research are a subset of the other phase; or (d) multilevel—involves participants representing two or more samples coming from different populations samples. The design utilized in this mixed methods study was sequential nested—participants in the qualitative phase were selected from the quantitative sample group.

Study Population. To address sample size and sample characteristics for both the quantitative and qualitative phases of the study, participants were selected from an overall population of approximately 4,101, 12th-grade students enrolled in a large metropolitan urban school district. The majority of the student population of the district

is represented by Hispanic students (72.6%) followed by African American students (23.1%), with small percentages of White students (2.2%) and Asian students (1.2%) (TEA, 2017). The district reports 34.5% of the population are comprised of English Learners.

Furthermore, the district documents economically disadvantaged and at-risk students at rates of 86.2% and 73.0%, respectively (TEA, 2017). The initial sample framework of this study, at the beginning of the August 2017 school year, was approximately 920, 12th-grade students attending a high-minority, high-poverty, Title I school in the selected school district. Students included in the sample framework were impacted by a hurricane. The displacement of students from the hurricane affected the participant sample, causing the sampling framework of 12th-grade students to be reduced to approximately 835 by study completion. Texas Education Agency (2017) reported the following ethnic distribution for the selected campus: (a) 91% Hispanic; (b) 6.5% African American; (c) 1.8% White; (d) .02% Asian; and (e) .03% Two or More Races. Moreover, 84.8% of students classified as Economically Disadvantaged, 76.6% of students classified as At Risk, and 17.2% of students classified as English Language Learners were reported (TEA, 2017).

Study Participants. The campus was purposefully selected from seven senior high school campuses across the district. The traditional comprehensive high school of approximately 3,000 10th, 11th, and 12th grade students, included a mixture of low- and high-achieving students, and had a school librarian/literacy specialist and library onsite. The school selected for the study was predominately Hispanic, yet ethnically diverse, and realized a cross-section of academic levels. Students registered in the selected school and

enrolled in six 12th-grade English 4 classes were chosen utilizing convenience sampling. After attending a meeting with the six teachers where the researcher asked permission to talk to students, the researcher visited the 12th-grade English classes to seek participant volunteers. After describing the purpose and procedures of the study to the class, students who raised their hand, volunteering to participate, received the letter of consent if they were 18-years of age or over; or students received the letter of consent and parent permission form if they were below 18 years-old.

Sampling Scheme - quantitative phase. A fully mixed sequential nested sampling design of equal status (Leech & Onwuegbuzie, 2009) was employed. A convenience scheme was applied for the quantitative phase, wherein students who volunteered were assessed using an online Information Literacy Assessment (ILA). According to Onwuegbuzie and Leech (2007a), convenience sampling indicates a participant's willingness and availability to participate in a research study. G*Power 3.1 statistical software (Faul, Erdfelder, Lang, & Buchner, 2007) was utilized to determine the smallest sample size necessary to ensure accurate and reliable findings (Onwuegbuzie & Leech, 2007a). The estimated minimum sample size was $n = 115$ students and was ascertained by employing an *a priori* statistical power analysis (Cohen, 1988) for a Pearson product-moment correlation coefficient. The statistical power analysis using G*Power 3.1 (Faul et al., 2007) revealed a sample size of 115 participants was needed to detect a moderate effect size (i.e., $f = .3$) at the 5% level of statistical significance and a power of .95. The final sample was comprised of 129 participants (i.e., 78 females, 51 males; and 118 Hispanics, 10 African Americans, and one White), exceeding the

estimated *a priori* minimum sample size. Hence, indicating adequate statistical power for testing the hypotheses (Onwuegbuzie & Leech, 2004).

Using a roster of students having permission to participate, I generated, via TRAILS, a portable document format (PDF) of 160, 4-digit codes, and I assigned a unique 4-digit number to each student at the time of assessment. Concurrently, I documented the associated self-reported student GPA for each student; thus, formulating a student roster of assessment activation codes and GPAs privy only to me. I gave listed students, who signed and returned their informed letter of consent to participate in the assessment, and when necessary a parent permission form, their letter of assent to be signed prior to the assessment. Participants were given their individual code to access the online assessment on a yellow sticky-note for them to keep for accessing their scores at a later time. The TRAILS assessment login page was displayed on the computers in the computer lab by the researcher. Students used their assigned 4-digit code to initiate the assessment.

Sampling scheme - qualitative phase. Creswell (2007) noted three to five interviews are adequate for a case study; however, Onwuegbuzie and Leech (2007a) asserted, “qualitative researchers should provide a rationale for decisions made regarding the length and number of interviews” (p. 108). Participants in the qualitative phase were selected employing extreme-case sampling (Johnson & Christensen, 2013) via the findings from the quantitative assessment data portion. To further explore student perceptions of information literacy skills proficiency and utilization of information literacy skills for the job market and college and career readiness, participants for this phase were selected based on two criteria, either not meeting or exceeding a minimum

score on the Tool for Real-time Assessment of Information Literacy Skills. Four participants were selected for the qualitative phase. Students selected were advised in the initial letter of consent, and parent permission form when necessary, distributed and explained by the researcher. However, the researcher, upon scheduling the interview, reviewed the purpose and procedures of the qualitative phase of the study.

Criterion sampling (Onwuegbuzie & Collins, 2007) and purposeful comparative sampling (Onwuegbuzie & Leech, 2007b) were used qualitatively to further analyze the assessment scores (Onwuegbuzie & Collins, 2007). A class report was generated from the TRAILS assessment, and the extreme-case criterion, participants whose assessment scores fell above 70% or whose assessment scores were below 30% on the assessment reports, was applied. The comparative sampling was employed to compare student scores with each other, such as by gender and home language. Due to the low number of diverse ethnicities and equally as low number of participants in ethnic categories other than Hispanic, comparative sampling was not used for ethnicity. Using the PDF roster generated for the quantitative phase, I selected four participants for the 30-minute individual semi-structured interviews based on score criteria. Students selected were reminded of the letter of consent distributed and explained by the researcher, describing purpose, procedures, and GPA disclosure for the quantitative phase of the study. The 30-minute individual interviews were conducted during normal school hours in the unoccupied library computer laboratory or in a vacant office. The selected location was based on the quietest and least likely room to be interrupted during the interview. Participants were offered selected dates and times from which to choose, to meet their respective schedules for their interview.

Ethical Considerations

Prior to research commencement, full disclosure of the study's intentions and interview procedures were reviewed with appropriate school district personnel and the university's International Review Board (IRB), obtaining permissions from each to conduct the study. I applied for permission to conduct all phases of the study through the Sam Houston State University Institutional Review Board (IRB), as well as permissions from the requisite superintendents and principals of the independent school district overseeing the participating school campus. After receiving permissions from both the participating school district and the IRB committee, participants were recruited and apprised of the purpose and process of the study. Informed consent, encompassing the quantitative and qualitative portion, was obtained from all interested participants for TRAILS assessment, GPA disclosure, and interview. Parental consent for participants under the age of 18 was also obtained. Assessments were conducted in the library laboratory, which consisted of 14 computers. No more than eight participants were assessed at one time, and the researcher remained with the participants during the assessment. Average assessment completion time was 30 minutes; however, students were allowed up to one-hour to complete. Two of the individual interviews took place in the library computer laboratory, and two took place in an unoccupied office near the library. Interviews lasted between 17 and 30 minutes. Participants were advised their participation could be terminated at any time during the study. Names and any other identifying participant information were kept confidential for both the quantitative and qualitative phases, and pseudonyms were used where needed. All resulting data, including all audio recordings and video recordings, were stored in a secure location and

will be held for a period of 3 years, after which time they will be destroyed (Sieber, 1992). I also advised participants that TRAILS scores, self-reported GPAs, and all other data will remain confidential, and kept locked in a file cabinet in the librarians' office that only the researcher can access. (See Appendix A for IRB permission and Appendix B for parental consent and student assent forms.)

Step 7: Research Design

The study used an equally, mixed non-experimental research design, sequential and purposeful in nature. The quantitative portion utilized both a correlational research design (i.e., Research Questions 1-3) and a quasi-experimental research design (i.e., Research Question 4), and was reflective of a postpositivist paradigm (Creswell, 2009). A social constructionist paradigm research approach was utilized qualitatively. According to Gergen (1985), "Social constructionist inquiry is principally concerned with explicating the processes by which people come to describe, explain, or otherwise account for the world (including themselves) in which they live" (p. 266).

This study included a mixed methods research design, reflective of a pragmatist paradigm. As a pragmatist (Onwuegbuzie & Leech 2005), applying a mixed methods framework to this research allowed for a rich study via substantial quantitative analyses of the participants' information literacy skills knowledge through the TRAILS assessment, and a comparative uncovering and examination of qualitative data and themes through targeted follow-up interviews (Creswell, 1995). Being a pragmatist allowed me to concentrate on the research problem (Creswell, 2009) of information literacy skills knowledge and proficiency in a low-socioeconomic, high-minority high school, employing quantitative and qualitative methods to understand the differences and

similarities among the varied students. Epistemologically and axiologically, my view was that culture influences the knowledge and value of high-poverty, minority students' erudition of information skills. As a high school information literacy specialist/librarian in a low-socioeconomic, high-minority urban school district, my desire was to understand how the results of this research can support students, at all achievement levels, to be prepared to effectively and efficiently use information literacy skills after graduation when directly entering the job market or to be college and career ready when continuing their academic endeavors. Quantitative and qualitative data for this study were collected sequentially and subsequently analyzed consecutively.

Step 8: Data collection

Instrument quantitative phase. The quantitative instrument was the TRAILS knowledge assessment designed by researchers at Kent State University, as a tool for librarians and teachers to assess students' information literacy skills (Schloman & Gedeon, 2007). TRAILS is an online multiple-choice assessment that was created using the AASL Standards for the 21st-Century Learner, and the instrument is publicly funded and offered at no-cost (Schloman & Gedeon, 2007). According to Schloman and Gedeon (2007), TRAILS was "designed as a classroom tool that enables a library media specialist to easily obtain a snapshot of skill levels in order to better tailor instruction efforts" (p. 45).

The researcher created a class session of the online assessment for participants. After signing assent form, each participant was assigned a distinct 4-digit code for each student to input to launch the assessment instead of their name. Therefore, anonymity was assured for anyone other than the researcher, and pseudonyms were assigned for

discussion purposes. The researcher also programmed the TRAILS assessment to display questions randomly, thereby, discouraging collaboration between participants. I facilitated the TRAILS assessments, remaining with students as they completed the questions, and only I had access to the Excel spreadsheet of codes given to each participant. Even though students were allowed one hour to complete the 45-question general assessment (Appendix C), all students completed the assessment in under one hour. The TRAILS encompassed the following five information literacy research categories: (a) developing the research topic; (b) identifying possible sources; (c) developing, using, and revising strategic searches; (d) evaluating sources and information; and (e) recognizing responsible use of information ethically and legally (TRAILS, 2016). The assessment responses consisted of four answer choices per question, and students were scored on the percent of total correct responses. Feedback to the researcher was provided in the form of reports for total group and per individual student basis on each of the five research process categories. This feedback allowed the librarian and 12th-grade English teachers to determine student strengths and weaknesses in conceptualizing information literacy research skills within the various assessment categories. By using the original link to TRAILS and inputting their original student code, once the questionnaires were completed and the class session closed, students could view their scores and review items in order assessed. By reviewing responses, students were allowed to work on weaknesses and improve skills before entering the job market, workforce training, or college admission.

Salem (2014), conducted a reliability test on the four TRAILS grade-level assessments, 3rd, 6th, 9th, and 12th-grade, using the Rasch model of Item Response

Theory. The reliability test was, “based on overall scale reliability, item fit to scale, distractor function, lack of bias based on differential item functioning analysis, item difficulty spread, and content coverage” (Salem, 2014, p. ii). On the 12th-grade 35-question draft test utilized, “the scale level indices indicate an acceptable level of test reliability ($\alpha = 0.82$)” to test information literacy” (Salem, 2014, p. 94). The item reliability index indicating items will remain in their order of difficulty after repeated administrations was item reliability = 0.98. According to Salem, reliability scores are on a 0 to 1 scale with closer to 1 being favored (Salem as cited in Bond & Fox, 2007). Additionally, Salem (2004) tested construct validity of the TRAILS assessment and concluded the assessment measures information literacy and results “also provide evidence that the student performance on the tests is not related to the reading involved on test items” (pp. 132-133).

Qualitative phase. According to Johnson and Christensen (2013), the foci of qualitative research are on examining events or phenomena and on comprehending idiosyncrasies of distinctive populations. Johnson and Christensen (2013) expressed the stated purpose in a qualitative study should help the researcher:

1. “Convey a sense of an emerging design by stating that the purpose of the study is to describe, understand, develop, or discover something” (p. 98).
2. “State and define the central idea that you want to describe, understand or discover” (p. 98).
3. “State the method by which you plan to collect and analyze the data by specifying whether you are conducting an ethnographic study, grounded theory, case study, or phenomenological study” (p. 98).

4. “State the unit of analysis and/or the research site (e.g., fourth-grade students participating in a specific program)” (p. 98).

Consequently, the qualitative instrument employed in this study was comprised of individual semi-structured interviews, a dialogue between one or more participants, as defined by Creswell (2005), via open-ended interview questions as reflected in Appendix D. According to Creswell (2003, 2007), interviews require preparation, construction of effective questions, and interview implementation. The interview questions used in the qualitative phase were constructed based on information literacy skills learned, information literacy skills used, and on how they feel about their assessment responses. Additionally, questions were developed incorporating my theoretical framework of how sociocultural—family, social, cultural—factors affect academic achievement. Questions included, but were not limited to how family, social, and cultural influences have affected students’ perceptions of and acclimatization to learning information literacy skills for job market and college and career readiness. In addition, non-verbal communication data as identified by Onwuegbuzie and Frels (2012) was analyzed. One or more of the nine non-verbal cues analyzed and interpreted are: (a) proxemics—physical distance between researcher and interviewee; (b) chronemics—pacing of speech and length of conversation silence; (c) kinesics—body posture and/or movement; (d) paralinguistics—pitch, volume, voice quality; (e) optics—use of eyes during interview; (f) linguistics—language syntax; (g) oculusics—eye use during conversation; (h) olfaction—noticeable smells during interview; (i) gustation—sense of taste; and (j) kinetics--use of touch (Onwuegbuzie & Frels, 2012). Wolgemuth et al. (2015) proclaimed:

... a growing body of literature points to the potential value of interviews as opportunities for self-reflection, appraisal, catharsis, being listened to, responded to emphatically, and to being validated (p. 354)

By employing a semi-structured one-on-one individual interview, follow-up questions were asked in order for participants to expound upon responses when necessary.

Procedure

Quantitative phase procedure. The researcher established a class session, specifically for study participants, in the TRAILS online assessment program prior to data collection. A class code was generated allowing class results and individual student statistics to be viewed during and after assessment completion. Afterward, the researcher created an Excel spreadsheet of 160 4-digit numbers, developed from the TRAILS website, to assign to participants for anonymity. Next, a meeting was scheduled with 12th-grade English Language Arts (ELA) teachers to discuss the research and the benefits to the participants and teacher. Permission had already been granted by the principal to proceed with the assessment, and ELA teachers also granted permission to speak to their individual classes for volunteers. After consent forms were distributed and collected by the researcher, time and date for the assessments were scheduled. Students were scheduled by contacting each 12th-grade English teacher per class who had study volunteers. Permission from respective English teachers was asked for the students to come to the library during their English period. If students were not available during the English class, students were requested during an elective class. Library student aides delivered official school student request passes to participants in their respective classes;

however, only the English teachers, participants, and researcher were cognizant of the reason for the library visit.

After arriving in the library, the participant(s) was escorted into the library's computer laboratory, and each student was given the participant assent form to sign. Next, a 4-digit code was written down and handed to each participant. At that time, participants were asked to self-report GPA. Collegiate and weighted GPAs and class standings were subsequently verified through a spreadsheet of all 12th-grade students from the Counseling Department. The quantitative phase occurred over a 5-week period, employing the following implementations by me as the researcher:

1. Week 1: Visited three of the six 12th-grade ELA teachers and talked to students about the study's purpose and the assessment process. The process was described to each of the three English classes and volunteers were given consent/parent forms. A lock-box was placed in each classroom for students to insert signed forms. Signed forms were collected on Wednesday and again on Friday.
2. Week 2: The TRAILS information literacy assessment was conducted for students who had returned their consent forms and requisite parent permission forms for students under 18-years of age. Forms were emptied from lock-boxes on Wednesday and at end of the week.
3. Week 3: The TRAILS information literacy assessment was conducted for students unable to be assessed the previous week, and the researcher visited more English classrooms seeking volunteers. Forms were collected from lock-boxes at the end of the week.

4. Week 4: The TRAILS information literacy assessment was conducted for students unable to take the previous week and the final group of English classrooms was visited to seek participants. Lock-boxes were emptied on Wednesday and Friday of the week.
5. Week 5: The TRAILS information literacy assessment was conducted with remaining students who had turned in consent/parent forms; however, due to scheduling, had not been assessed. Lock-boxes were retrieved from all 12th-grade English teachers' classrooms.

All forms were distributed by the researcher via English classes approximately one week prior to each TRAILS assessment date. The assessment date was determined by the researcher and affected teachers based on student availability during their English classes. If the participant was not available during their English class, he or she was requested to come to the library during an elective class. A locked box was left in each 12th-grade English teacher's classroom, and the returned and signed documents were collected by the researcher from each class twice per week during the week previous to the scheduled assessments. All signed documents were kept secure in a lockable file cabinet in the researcher's office. The researcher's office remained closed and locked whenever the researcher was not there.

Using a roster of students having permission to participate, I generated, via TRAILS, a PDF of 160 4-digit codes; and I assigned a unique 4-digit number to each student at the time of assessment. Concurrently, I documented the associated self-reported student GPA for each student; thus, formulating a student roster of assessment activation codes and GPAs privy only to me. I gave listed students, who

signed and returned their informed letter of consent to participate and parent permission form if necessary, their letter of assent to be signed prior to the assessment. Participants were given a unique 4-digit code on a yellow sticky-note, and students were instructed to retain the code in order for them to access their score after all participants were evaluated and the assessment closed. Prior to meeting with each participant group, the researcher arranged the computer laboratory to have the TRAILS login page displayed on the computers. Students used their individually assigned 4-digit code to activate the assessment. No more than eight participants were assessed at one time, and in many cases as few as one. The researcher remained with the participants during the assessment to ensure silence.

The postpositivist paradigm (Creswell, 2009), exhibited in the quantitative phase, was used to explore how knowledge of information literacy skills affects academic achievement. This was accomplished by comparing information literacy assessment scores, a percentage score based on correct number of answers of the 45 questions, to a self-reported student collegiate GPA and a weighted grade point average. According to York, Gibson, and Rankin (2015), GPA is an indicator of academic success, defined as “academic achievement, attainment of learning objectives, acquisition of desired skills and competencies...” (p. 5). A correlational analysis was used to compare the TRAILS assessment scores and GPAs of participants to determine the relationship between information literacy skills knowledge and academic achievement.

Qualitative phase procedure. Creswell (2007) noted three to five interviews are adequate for a case study; however, Onwuegbuzie and Leech (2007a) asserted, “qualitative researchers should provide a rationale for decisions made regarding the

length and number of interviews” (p. 108). Not only does Creswell (2007) suggest that participants selected are appropriate, but the interview should be conducted in an appropriate environment that is comfortable and unrestricted, to cultivate information sharing. Prior to commencement of the interviews, full disclosure of the intentions and procedures of the study were reviewed with each participant, written informed consent was granted by the participant, and no risks to the participant were revealed. The semi-structured one-on-one interviews of the selected four students were conducted over a two-week period.

The four participants were purposefully selected based on the extreme case of lowest and highest scores. Two students, one African American male, and one Hispanic female were initially selected from the lowest scorers; however, the Hispanic female did not feel comfortable being interviewed in English; therefore, another Hispanic female scoring next lowest was selected. Two Hispanic males scored the same highest score on the assessment, and interviewee selection was based on convenience of availability. The female participant selected from the higher scoring participants, was purposefully selected as she was also the valedictorian of the class. The interviews were conducted during normal school hours and at times conducive to the student. The interviews were executed within one-week after the completion of the quantitative phase. Two interviews were conducted in the computer room of the school library and two interviews were conducted in an empty office just outside of the library. Selection of interview location was based on the quietest room at the scheduled time. The computer laboratory consisted of 14 computers surrounding the square perimeter, and two round tables with four chairs

each were situated within the middle of the room. The room had two windows, covered with blinds, facing into the library. The blinds remained closed during each interview.

Each student was asked to participate in a 30-minute individual interview, consisting of 15, basic descriptive, open-ended questions (Appendix D), and each student was video and audio recorded. Recordings were subsequently transcribed by Rev.com transcription service, and to maintain anonymity, no identifying factors were included. The information on the video and audio recordings were triangulated as I listened to the audio recordings and viewed and listened to the video recordings. Participants member checked their respective transcript for accuracy and authenticity (Creswell, 2003).

Michael, a male of Hispanic ethnicity whose home language was Spanish, was the first participant interviewed after the close of the quantitative information literacy assessment. Michael's interview was conducted in the school library's computer laboratory at approximately 7:50 in the morning during his off period. The interview, which lasted approximately 17 minutes, was both audio and video recorded. Michael has a collegiate GPA of 3.16 and a weighted GPA of 5.86, scoring 78% on the TRAILS assessment. After hand delivering the interview transcript to Michael, I asked him to review it and return to me personally. The following week, Michael visited the library and advised there were no corrections or changes to the verbiage, and he was satisfied with the transcript as it was written.

Darius, an African American male with English speaking parents, was the second participant to be interviewed; and he represents the lowest extreme of the TRAILS assessment results scoring 22%. This interview was held the same day as Michael's, and also in the school library computer laboratory. However, Darius's interview was

conducted in the early afternoon during his fourth-period class where he is assigned as an aide to a counselor housed in the library. The interview lasted just over 17 minutes.

Approximately one week after the interview, Darius was given the interview transcript on a Friday during his same fourth-period counselor aide class. Darius was asked to review the transcript for authenticity of verbiage and meaning, and he was requested to return the transcript to the researcher with any corrections or additions. Upon seeing Darius, the following week during his 4th-period class, I asked him if there were any corrections to his transcript interview, and he indicated everything was correct and he had no additions. Darius's collegiate GPA is 2.40, his weighted GPA is 4.64.

The third interviewee was Diana, and she represents the higher extreme, scoring 73% on the TRAILS assessment. Diana was a Hispanic female, her home language is Spanish, and she is the valedictorian of the graduating class, holding a 3.98 collegiate GPA and a 7.76 weighted grade point average. This interview was conducted in an empty office just outside of the library during the afternoon of the scheduled fourth-period class time. Diana's interview was conducted the following week after the first two interviews. Diana was an early release student, having no fourth- and fifth- period classes, and the interview lasted just over 30 minutes.

The fourth interviewee, Eliza, has a 2.24 GPA and scored at 27% on the TRAILS assessment. This interview was conducted in the same empty office as the third interview. Eliza was requested to come to the library by the researcher previous to the interview, and at that time she was scheduled to return during the fifth-period of the school day when she was scheduled for early release with no class scheduled. Eliza's interview lasted over 34 minutes. The following week when Eliza visited the library, she

was given the transcript and asked to review it for errors or changes. Approximately one-week later Eliza visited the library again and stated there were no corrections; however, she had been encouraged by her boyfriend to add more information about her family. As of this writing, additional information has not been received.

Guba and Lincoln's (1989) authenticity criterion of fairness ensures data are authentically co-constructed by having participants member check the transcript to improve accuracy and credibility (Creswell, 2003). Other authenticity criteria embodying constructionist understanding and assisting in increasing legitimation that might be pertinent to this study are: (a) ontological authenticity—the degree to which the researcher evaluates how the participant has become more knowledgeable and aware, (b) educative authenticity—the criteria by which those involved in the interview process have become more considerate of others, (c) catalytic authenticity—the extent by which actions are facilitated and stimulated by participants, and (d) tactical authenticity—the extent to which participants are empowered to act on the results and ensuing comprehension from a given study. Validating and legitimating data is inclusive of Step 10 in the 13-step mixed methods process.

After member checking the transcribed documents, each participant indicated their responses were accurately reflected. Using my field notes, created after speaking with each interviewee regarding their transcription, I evaluated the dialogue between the researcher and interviewees when discussing their transcript for genuineness of meaning. Ontological authenticity was evident when Darius told the researcher after reading the transcript he had a better understanding of information literacy. Catalytic authenticity was exhibited by Eliza when she indicated, after prompting from her boyfriend, she

wanted to add more information about her family dynamics. Table 4 reflects the five authenticity criteria used in the interviews for this study.

Table 4

Authenticity Criteria

Criteria	
Criteria 1:	Provide equitable representation of stakeholder values through processes such as interviewee member checking and interviewer debriefing.
Criteria 2:	Promote the interactive growth of stakeholders through interviewing and debriefing processes.
Criteria 3:	Clarify both the representative and divergent values of stakeholders
Criteria 4:	Encourage stakeholder actions to emerge from increased awareness and resolution of divergent understandings
Criteria 5:	Support the ability of stakeholders to collect, document, follow up on, and collaboratively assess data from a position of increased understanding of both representative and divergent values

Note. Criteria adapted from Guba and Lincoln (1989) and Onwuegbuzie et al. (2008).

I compared the video recording to the audio transcription, employing transcribing conventions for editing purposes. By comparing the video data to the audio transcription, I was able to triangulate the participants' narrative with their voiced expressions, as well as expand my scope of understanding their responses, by analyzing their chronemics and paralinguistics from the video recording (Denham & Onwuegbuzie, 2013). Basic descriptive questions were included in the interviews allowing participants to inform and to illuminate their experiences of learning and using information literacy for the job market or college and career readiness. Moreover, by using a hermeneutic approach in this explanatory multiple case study in this phase of the mixed methods research design

(Ivankova, Creswell, & Stick, 2006), I gained insight and understanding into student motivations for learning, comprehending, and using information literacy skills.

To establish study authenticity, the researcher participated in a debriefing interview (Guba and Lincoln, 1989). The debriefing interview was conducted digitally by having a cohort member ask questions of me to which I responded digitally. I was asked three pre-selected questions: (a) In what ways did knowing something about your interviewee advance, enhance, or distract from the interview and the interpretation process?; (b) What findings surprised you?; and (c) To what extent do you think your own empathy and insights of the participants evolved during the course of the interviews? These questions were utilized as means to assess researcher bias (Onwuegbuzie, Leech, & Collins, 2008). As mentioned previously, authenticity gauges are: (a) ontological authenticity; (b) educative authenticity; (c) catalytic authenticity; and (d) tactical authenticity (Guba & Lincoln, 1989) and were employed to triangulate researcher authenticity of the study.

Step 9: Data Analysis

Quantitative analysis. Employing a statistical power analysis of .95 using G*Power 3.1 *a priori* sample size of 115 participants sufficed for conducting a Pearson product-moment correlation. Effect sizes were reported for all significant findings, and a .05 level of statistical significance was used. Conditions for small, medium, and large effect sizes (Cohen, 1988) was determined utilizing the omega squared (Field, 2005), and a statistical analysis tool, such as Microsoft's Statistical Package for Social Sciences version 24 (SPSS) software program, was utilized to analyze all data collected in the quantitative phase of this study. A data file was created in the SPSS and all data were

imported for analyses employing Pearson product-moment correlation coefficient. Data files analyzed included assessment data scores, GPAs – collegiate, based on a 4.0 scale and weighted, based on added points for Advanced Placement (AP) and Gifted and Talented (GT) classes, and other descriptive statistics including gender, ethnicity, and home language.

Qualitative analysis. Qualitative data analyses were completed by employing the software program QDA Miner Version 5.0.18 (Provalis Research Version, 2016a) to code and to categorize emerged themes and QDA Miner's component part, generating significant topics. Typically, understanding what a person says is directly correlated to their word usage, and repeated words are more salient to them (Ryan & Bernard, 2003). These emergent data were used to determine themes and significant meanings by use of constant comparative method and discourse analysis. By examining participants' interview texts, linguistic expressions, and social attitudes related to educational values and information literacy were analyzed and exposed via the constant comparative method (Glaser, 1965). Additionally, interviewees' data were mined seeking language to edify Gee's (2005) seven building tasks. By applying multiple analyses to the data, the study's veracity was bolstered (Leech & Onwuegbuzie, 2007).

The constant comparative method is situated within the grounded theory approach to qualitative analysis (Glaser & Straus, 1967), with comparison utilized as the main tool for data examination (Tesch, 1990). According to Tesch (1990),

The method of comparing and contrasting is used for practically all intellectual tasks during analysis: forming categories, establishing the boundaries of the categories, assigning the segments to categories, summarizing the content of each

category, finding negative evidence, etc. The goal is to discern conceptual similarities, to refine the discriminative power of categories, and to discover patterns. (p. 96)

When conducting the constant comparative method, transcripts for each interviewee were input into QDA Miner, codified into categories, and subsequently themed for patterns. Coding allowed the researcher to condense data while heuristically capturing the most meaningful material (Miles, Huberman, & Saldaña, 2013). This procedure was an important step in qualitatively analyzing interview data because of the interpretive content and significance of thematic revelations (Gonzales, Venzant-Sampson, Valle, & Onwuegbuzie, 2015). Participants' data were thematically categorized based on chunking interview responses and assigning labels via the qualitative data analysis tool. Examining data for similarities and differences illuminated the meaning of each student's expressions via the constant comparative method. Constan (1992) proposed three categorizing components: (a) origination, which instigated from the interviewees; (b) verification, which involved confirmation of data findings by comparing to previous comparable research (Boeije, 2002); and (c) nomination, which entailed naming emerging categories after interview data are dissected.

Georgaca and Advl (2011) stated, "...discourse analysis is a social constructionist approach. For social constructionism, reality and identity are systematically constructed and maintained through systems of meaning and through social practices" (p. 148). By employing Gee's (2005) seven building tasks, focus was placed on participants' constructed relationships and how they might be enacted throughout the interview. Gee's first building task is *significance*—how did the participants' language connote important

matters. Practices, also described as *activities*, is the second building task Gee describes as how language is enacted. The analyzed data answered the question, in what activities did the participants engage? The third task, *identities*, seeks language on what roles participants' construct in their language—what identities might be enacted by the participants? *Relationships* is the fourth task, and is used to indicate the various types of relationships, such as student, worker, or organization with whom the participants communicate. How participants perceive what is proper and appropriate in our society reflects the fifth task of *politics*; and the sixth task of *connections* examines how participants might associate the relevancy of characteristics in their language. The last building task is *sign systems and knowledge* and encompasses the diverse languages and belief systems interviewees might utilize and enact in their interview.

Mixed data analysis. This study was equally weighted, sequential quantitative-qualitative analysis of data from each TRAILS information literacy assessment, which determined the 4 qualitative research participants after analyzing scores. Outliers—lowest and highest assessment scorers—were selected to comprise the qualitative sample group. Furthermore, qualitative data from the interview texts were quantitized using qualitative coding software WordStat 7.1.20 (Provalis Research, 2014), a component QDA Miner Version 5.0.18, allowing for validation and confirmation of patterns and conclusions of the mixed data (Bazeley, 2003). Sandelowski, Voils, and Knafl (2009) acknowledged, “Quantitizing, commonly understood to refer to the numerical translation, transformation, or conversion of qualitative data, has become a staple of mixed methods research (e.g., Boyatzis, 1998; Greene, 2007; Onwuegbuzie & Teddlie, 2003; Teddlie & Tashakkori, 2006)” (p. 208).

After analyzing various mixed methods analysis strategies, Onwuegbuzie and Combs (2010) developed a framework for analyzing mixed data. Their framework consists of the following 13 criteria:

1. Rationale/purpose for conducting the mixed analysis
2. Philosophy underpinning the mixed analysis
3. Number of data types that will be analyzed
4. Number of data analysis types that will be used
5. Time sequence of the mixed analysis
6. Level of interaction between quantitative and qualitative analyses
7. Priority of analytical components
8. Number of analytical phases
9. Link to other design components
10. Phase of the research process when all analysis decisions are made
11. Type of generalization
12. Analysis orientation
13. Cross-over nature of analysis

A brief description of how the first seven criteria manifested during the mixed methods analysis phase follows.

The purpose, criteria one of Onwuegbuzie and Combs (2010) mixed methods data analysis framework, of ensuring complementarity, is to “measure overlapping but also different facets of a phenomenon, yielding an enriched, elaborated understanding of that phenomenon” (Greene et al., 1989, p. 258). Utilizing a mixed methods analysis resulted in complementarity attributable to expanding the 129 quantitative results via explanation

through qualitative interviews (Greene et al., 1989). An additional purpose of executing mixed methods analysis was to develop understanding of information literacy skills and instruction beyond the online assessment (Greene et al., 1989).

For criterion 2, as mentioned previously my paradigmatic view is pragmatism, which, according to Onwuegbuzie and Combs (2010), affords a more “practical and outcome-oriented method of inquiry that is based on action and leads, iteratively...” (p. 412). Criterion 3 comprises the two data types analyzed – quantitative and qualitative; and for criterion 4 a total of three data analyses were used. A Pearson Correlation was conducted on descriptive and inferential quantitative data and constant comparative and discourse analysis for qualitative data. Criterion 5 of time sequence was sequential, wherein, the quantitative phase occurred first and then informed the qualitative phase. The level of interaction between the quantitative phase and qualitative phase is parallel. Teddlie and Tashakkori (2009) asserted quantitative data, using descriptive and inferential data and thematic analyses via qualitative data are two distinct processes; however, each provides an understanding of the other event leading to similar or contrary results. Following criteria 7, the priority of the analyzed components was of equal importance. The qualitative interviews were as significant to comprehending the quantitative data, as the quantitative data were to understanding participant information literacy skills.

Summary

In Chapter III the methodology and study design are described. This study used an equally, mixed non-experimental research design, sequential and purposeful in nature. The purpose of this mixed methods study was to explore and to compare the information

literacy skills knowledge and proficiency of 12th-grade students. To that end, Chapter III began with a review of the quantitative research question and qualitative research questions, along with the quantitative hypotheses followed by the mixed methods research question. A review of Collins's et al. (2006) first 5 steps of their 13-step mixed method research process was presented, and steps 7-10 were introduced. In Chapter III, I described the study methodology consisting of: (a) sampling design, (b) research design, and (c) data collection. Sampling Design was inclusive of population, participants, and ethical considerations. Within Research Design were quantitative and qualitative typologies and research paradigms. Data collection methods, of describing instrument used and procedure followed for each phase, ensued. Chapter IV delineates results, reiterating the study's purpose, followed by the quantitative research question and results, qualitative research questions and results, mixed analysis research question and results, and ends with a chapter summary.

CHAPTER IV

Results

Introduction

The purpose of this mixed methods study was to explore and to compare the information literacy skills knowledge and proficiency of 12th-grade students to their academic achievement. This purpose was accomplished by comparing scores from an online information literacy assessment, TRAILS, to student collegiate and weighted GPAs. This research was in response to a deficit in research on information literacy skills proficiency at the secondary level, and specifically in a high-minority, low-socioeconomic, urban school district. The second purpose was to ascertain perceptions of 12th-grade students' knowledge of information literacy skills for job market and for college and career readiness and their viewpoints regarding familial, social, and cultural, influences on their achievement. The secondary purpose was achieved via individual semi-constructed interviews of select participants.

Quantitative Results

Research Question. The following quantitative research question addressed high-poverty, minority secondary students' scores on an information literacy skills assessment in comparison to grade-point average.

To determine if a correlation was present between information literacy skills proficiency and academic achievement, as measured by GPA of 12th-grade high school students in a diverse school setting, the following research question was explored, What is the relationship between knowledge of information literacy skills and academic achievement among 12th-grade students in a traditional comprehensive school?

Research Hypotheses

The following two quantitative hypotheses were tested in this study:

1. A relationship exists between knowledge of information literacy skills and academic achievement among 12th-grade students in a traditional comprehensive school;
2. A difference exists in information literacy knowledge between higher-achieving and lower-achieving 12th-grade students in a traditional comprehensive high school on an information literacy assessment.

Means and standard deviations were initially examined for each of the following pairs of variables: (a) percentage score of total correct answers on TRAILS online assessment and collegiate GPA and (b) percentage score of total correct answers on TRAILS online assessment and weighted GPA. Examination of scatterplots depicting the relationship between total correct and collegiate GPA and total correct and weighted GPA illustrated a positive linear relationship. Indication of positive linear relationship supported the calculation of several coefficients. The standardized skewness coefficient (i.e., the skewness value divided by the standard error of skewness) along with the standardized kurtosis coefficient (i.e., the kurtosis value divided by the standard error of kurtosis), indicated no significant deviation from normality for all but one of the variables. The standardized skewness for total responses correct on the TRAILS assessment was .84 and the standardized kurtosis coefficient was -1.26. With regard to collegiate GPA and weighted GPA, the standardized skewness was -3.81 and -2.65, respectively, along with the kurtosis for each at .49 and .66, respectively. Because the majority of standardized coefficients fell within the normal range of -3.00 and 3.00

(Onwuegbuzie & Daniel, 2002), indicating no significant deviation from normality, a series of parametric analysis procedures, namely, Pearson's product-moment correlation coefficients were conducted. Descriptive statistics are presented in Table 5.

Table 5

Descriptive Statistics for TRAILS Assessment Scores and Reported GPA

Variable Name	<i>N</i>	<i>M</i>	<i>SD</i>
Total Correct	129	51.74	12.72
Collegiate GPA	129	2.99	0.63
Weighted GPA	127	5.44	1.07

Pearson's r revealed a relationship between total correct and collegiate GPA as statistically significant, $r(129) = .55, p < .001$. According to Cohen (1998), the positive relationship between the two variables revealed a moderate effect size. By squaring the correlation coefficients, it was determined each variable explained about 30% of the variance in each other. Moreover, statistical significance was revealed between TRAILS score and weighted GPA, with a slightly stronger relationship between the variables, $r(127) = .63, p < .001$, revealing a moderate to large effect size (Cohen, 1998). The strength of variability between TRAILS score and weighted GPA increased, $r^2 = .40$ or 40%. The total number of participants for weighted GPA is slightly smaller because there was no weighted GPA reported for two students. For each correlation between TRAILS score and either collegiate or weighted GPA, a relationship between knowledge of information literacy skills and academic achievement was revealed.

The assessment included five areas of assessment on the research process. In Table 6, Means and Standard Deviations are displayed for TRAILS Total Score and each sub assessment.

Table 6

Descriptive Statistics for Means and Standard Deviations of Category Variables

Variable Name	N=129	
	<i>M</i>	<i>SD</i>
TRAILS Total Score	51.7364	12.71596
Develop Topic	58.2745	18.35605
Identify Sources	40.3101	19.99758
Search strategies	49.0853	17.68740
Evaluate Resources	58.6667	20.19334
Use Information Responsibly	54.9147	17.78080

Statistical significance was also demonstrated between TRAILS score and Gender. Of the 129 participants, 51 were male students and 78 were female students. Table 7 depicts the means and standard deviations of male and female for each of the variables.

Table 7

Descriptive Statistics for Means and Standard Deviations for Gender Variables

Variable Name	<i>M</i>	<i>SD</i>
TRAILS Total Score (<i>N</i> =129)	51.74	12.72
Male (<i>n</i> =51)	51.14	12.66
Female (<i>n</i> =78)	52.13	12.81

Pearson's r for TRAILS score by gender and weighted GPA also demonstrated statistical significance for males, $r(51) = .57, p < .001$, explaining the variance of $r^2 = .32$ or 32% between the variables, a moderate effect size (Cohen, 1988). Statistical significance was also revealed for females with a slightly stronger effect size, $r(78) = .68, p < .001$, and variance of $r^2 = .46$ or 46%. According to Cohen (1988), the positive relationship between the two variables revealed a moderate to large effect size.

Means and standard deviations for the variables examined, specifically, TRAILS score for the five TRAILS sub assessment research categories by gender are presented in Tables 8 and 9. Examination of a series of scatterplots illustrated a positive linear relationship between TRAILS score and weighted GPA, as well as, weighted GPA with each of the five TRAILS research categories. A lack of significant deviation from the linearity in distribution of scores validated the calculation of several correlation coefficients.

Table 8

Descriptive Statistics for Means and Standard Deviations of Male Group for Category Variables

Variable Name	$n = 51$	
	M	SD
TRAILS Score	51.1373	12.66494
Develop Topic	58.2745	20.24755
Identify Sources	38.6275	19.90172
Search strategies	49.9020	17.67400
Evaluate Resources	60.5294	20.72520
Use Information Responsibly	51.4118	15.95892

Table 9

Descriptive Statistics for TRAILS Assessment Scores and Reported GPA for Female Participants

Variable Name	<i>n</i> = 78	
	<i>M</i>	<i>SD</i>
TRAILS Score	52.1282	12.81574
Develop Topic	58.1154	17.14338
Identify Sources	41.4103	20.11166
Search strategies	48.5513	17.79001
Evaluate Resources	57.4487	19.87797
Use Information Responsibly	57.2051	18.62086

Figure 3 demonstrates scores in the five sub-assessment areas by gender and home language. Home Language and Gender *SD* are displayed for each sub-assessment area. Figure 4 depicts scores in each of the sub-assessment areas on the TRAILS according to higher- versus lower- achieving students, based on collegiate GPA. Lower-achieving students are designated as those with collegiate GPAs below 2.5 on a 4.0 scale.

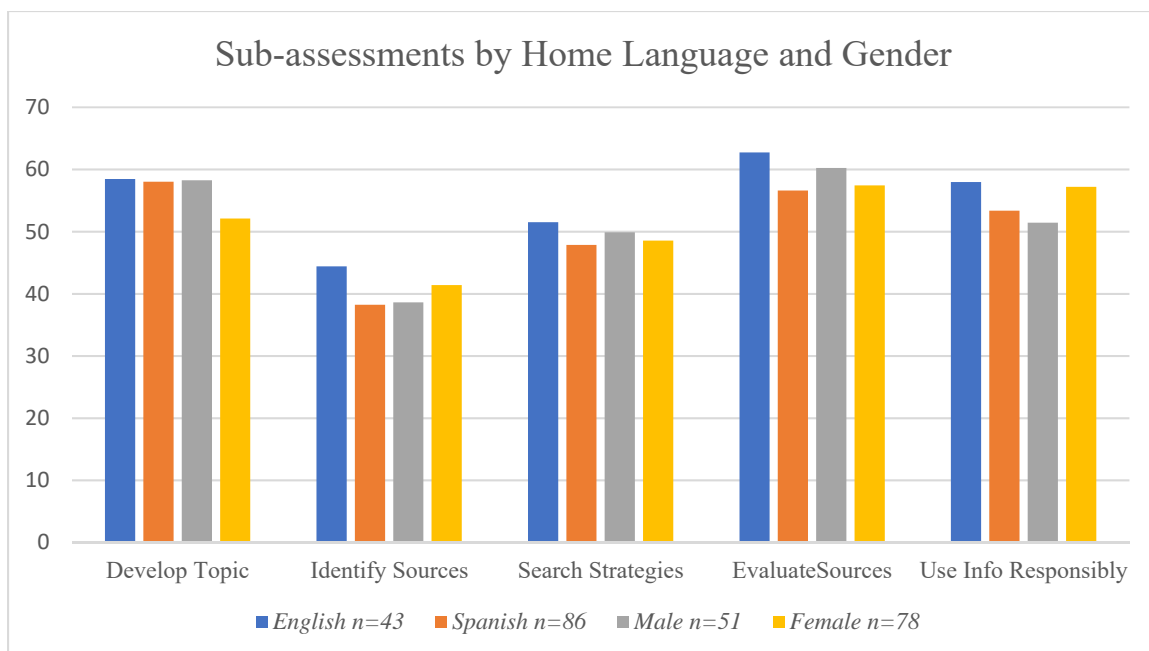


Figure 3. Sub-assessments categorized by home language and by gender.

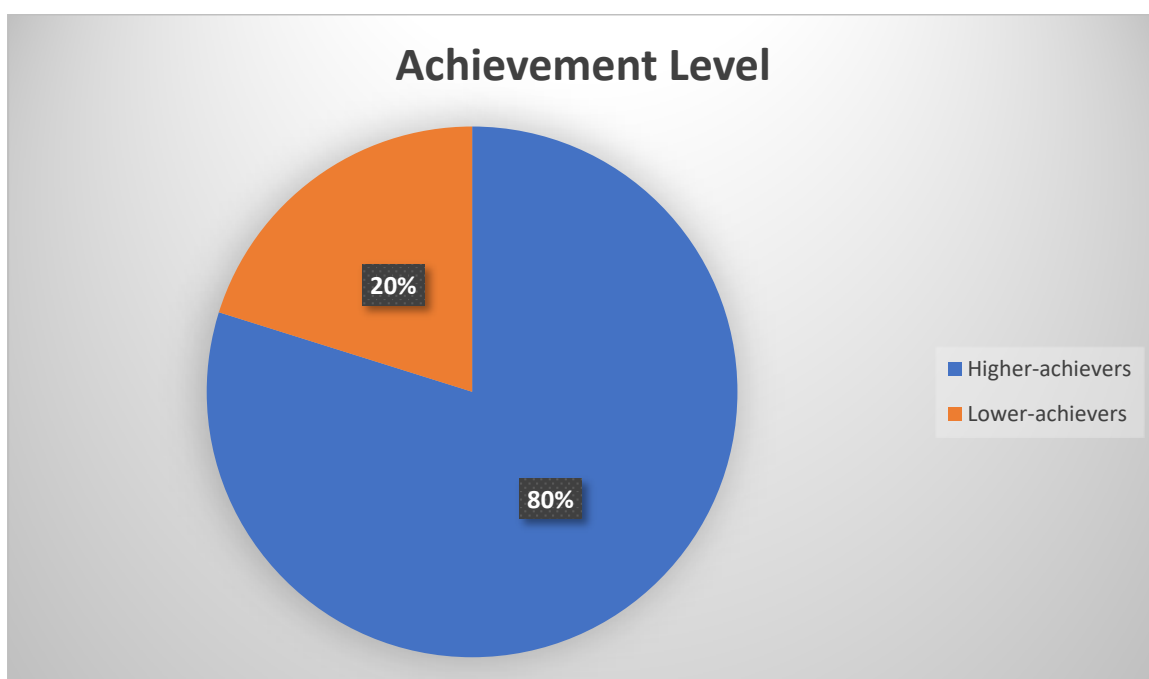


Figure 4. Division of higher-achieving and lower-achieving participants. The chart represents the percentage of participants designated as higher-achieving – GPA greater than 2.5 and lower-achieving – GPA lower than 2.5.

Qualitative Results

The semi-structured one-on-one interviews of the selected four students were conducted over a two-week period. The four participants were purposefully selected based on the extreme case of lowest and highest scores. Two students, one African American male, and one Hispanic female were initially selected from the lowest scorers; however, the Hispanic female did not feel comfortable being interviewed in English; therefore, another Hispanic female scoring next lowest was selected. Two Hispanic males scored the same highest score on the assessment, and interviewee selection was based on convenience of availability. The female participant selected from the higher scoring participants, was purposefully selected because she was the valedictorian of the class. The interviews were conducted during normal school hours and at times conducive to the student,

Each student was asked to participate in a 30-minute individual interview. The interview consisted of 15, basic descriptive, open-ended questions (Appendix D), and each student was video and audio recorded. Recordings were subsequently transcribed by Rev.com, a transcription service, and only pseudonyms were used. At no time were student names included on audio or video recordings. Once the recordings were transcribed, triangulation occurred by the researcher listening to the audio recordings and viewing the video recordings. Following transcription, the participants member checked their transcripts for accuracy and authenticity (Creswell, 2003).

Michael, a male of Hispanic ethnicity whose home language was Spanish, was the first participant interviewed after the close of the quantitative information literacy assessment. Michael's interview was conducted in the school library's computer

laboratory at approximately 7:50 in the morning during his off period. The interview, which lasted approximately 17 minutes, was both audio and video recorded. Michael has a collegiate GPA of 3.16, a weighted GPA of 5.86, and scored 78% on the TRAILS assessment. After hand delivering the interview transcript to Michael, I asked him review it and return to me personally. The following week, Michael visited the library and advised there were no corrections or changes to the verbiage, and he was satisfied with the transcript as it was written.

Darius, an African American male with English speaking parents, was the second participant to be interviewed; and represented the lowest extreme of the TRAILS assessment results, scoring 22%. This interview was held the same day as Michael's and in the school library computer laboratory. However, Darius's interview was conducted during the early afternoon of his fourth-period class where he is assigned as an aide to a counselor housed in the library. The interview lasted just over 17 minutes.

Approximately one week after the interview, Darius was given the interview transcript on a Friday during his same fourth-period counselor aide class. Darius was asked to review the transcript for authenticity of verbiage and meaning, and return the transcript to the researcher with any corrections or additions. Upon seeing Darius, the following week in his 4th-period class, I asked him if there were any corrections to his transcript interview, and he indicated everything was correct and he had no additions. Darius's collegiate GPA is 2.40, his weighted GPA is 4.64.

The third interviewee was Diana, and she represents the higher extreme, scoring 73% on the TRAILS assessment. Diana is a Hispanic female, her home language is Spanish, and she is the valedictorian of the graduating class, holding a 3.98 collegiate

GPA and a 7.76 weighted grade point average. This interview was conducted in an empty office just outside of the library during the afternoon of the scheduled fourth-period class time. Diana's interview was conducted the following week after the first two interviews. Diana was an early release student, having no fourth- and fifth- period classes, and the interview lasted just over 30 minutes.

The fourth interview was conducted in the same empty office as the third interview. Eliza was requested to come to the library by the researcher before the interview, and at that time she was scheduled to return during the fifth-period of the school day when she was slated for early release with no class scheduled. Eliza's interview lasted over 34 minutes. The following week when she visited the library, she was given the transcript and asked to review for errors or changes. Approximately one week later, Eliza visited the library again and stated there were no corrections; however, she had been encouraged by her boyfriend to add more information about her family. As of this writing, additional information has not been received. Eliza has a 2.24 GPA, but had no weighted GPA at the time because she had recently returned to school after dropping out. Eliza scored at 27% on the TRAILS assessment.

Qualitative Research Questions. The following questions were addressed after the quantitative phase by selected participants based on scoring criteria:

1. What are the perceptions of 12th-grade students in a traditional comprehensive school regarding obtaining information literacy skills for job market or for college and career readiness?

2. How have sociocultural (e.g., family, social, cultural) factors influenced the perceptions of information literacy skills needed for job market or for college and career readiness?

Qualitative data analyses were completed by employing the software program QDA Miner Version 5.0.18 (Provalis Research, 2016a), to code and categorize emerged themes and significant meanings by use of constant comparative method and discourse analysis, by mining interviewees' data seeking language to edify Gee's (2005) seven building tasks. Qualitative data will commence with constant comparative results.

Constant comparative method results. Through coding participants' transcripts, emergent data themes revealed from the first research question are: (a) comprehending information literacy; (b) utilizing research process; (c) instructional and collaborative influencers; and (d) life after graduation. First, each participant was asked to define the term *Information Literacy*. Table 10 denotes each participant's response. To safeguard confidentiality, all participants have been de-identified by a pseudonym.

Table 10

Theme -- Comprehending the Term Information Literacy

Participant	Statement
1. Michael	“Well, it's basically like being able to read. So, you read information and you understand what it means.”
2. Darius	“When I hear the word ‘information’, I think about school. I think about me doing a research or a paper. I think about English class, to be specific. Yeah, just researching about a specific type of person, or something like a project.”
3. Diana	“I think of information literacy as being able to navigate the internet because the internet is where I get most of my information from. It's the easiest, fastest, I think the most reliable way to get as many sources as I feel like I need to from different perspectives. I think that navigating the internet is navigation literacy.”
4. Eliza	“I think of like the whole genre of like writing and books and just literature itself. Like data or surveys, kind of.”

Note: Response to question, “When you hear the term information literacy, what does that mean to you?”

For the theme Utilizing Research Process, responses were categorized based on the steps in the research process according to AASL and ACRL standards. These standards included; (a) topic choice (b) selecting resources, (c) organizing sources, (d) evaluating sources, and (e) citing sources. Table 11 reflects responses of participants when utilizing the research process.

Table 11

Theme – Utilizing Research Process

Participant	Statement
1. Michael	<p>I found that the internet is a really powerful tool to find information, and not just find it, but find it quicker.</p> <p>...we used a search engine and we also used websites where they only post like scientific articles.</p> <p>Michael also added when discussing selecting sources:</p> <p>Well, back then, I'd researched like one source. But now, I research like three or four different sources, because they could have like different points of views, and different information, and most of the time, one source would contradict what the other source would say. But then the other two sources would back one of the two, so yeah</p> <p>Well, the most difficult part is narrowing down what information you want to keep in your paper and what information you don't need. Because most of the time, like I find I'm intrigued by what I read and I want it all in the paper. But you can't do that. You have to compact to what the assignment is listing.</p> <p>When discussing plagiarizing Michael shared:</p> <p>Well, one of the things is like don't plagiarize because ... I mean, you're assigned an assignment, but you have to be original about it. You can't copy off other peoples' work. Also, fact-checking yourself because you don't want to write a paper, and sort of seem contradictory to what you're trying to say in your paper.</p>
2. Darius	<p>I like to look at news sources 'cause you know that's a credible source. Stay away from Wikipedia and all that. I like news sources, newspapers. Just stuff that's credible. I just stay with stuff on paper that you can go back and see that it's something real and it's credible to use.</p> <p>I read it and then I just, you know, kind of put it in my own words. Not so much the exact same thing, but I just would read it and I would add stuff to it that they don't have, maybe, or not use the things that they have and use something different, but still pertains to the information that you have.</p>

(continued)

Participant	Statement
	Well, what I do first if this is on a specific person or like, on euthanasia ... when I wrote a paper on euthanasia. First you look up the definition and you watch stuff on it to see what it is and what's it about. Then you start to look up individual cases. Real life scenarios, what happened, people that have used it, people that are against it, and people that went to jail for euthanizing other people when it was not legal
3. Diana	<p>Diana expressed when discussing her process:</p> <p>The first thing that I do is, I usually go to Wikipedia. I'll read it for an overview and I'll go down to the bottom of the page and there's a lot of sources there. A lot of them are primary and their linked online, so I can just go ahead and click them. Go through that.</p> <p>I do, do a Google search for them and I go through Google Books. Then I start going into maybe articles. Then I go ahead and I'll go to the Smithsonian AP Archives. I think I mentioned Google Books. I'll start going through there.</p> <p>After that, once I have narrowed down my books or my sources, I'll go down to usually the Houston Public Library or Rice.</p> <p>When discussing selection of sources Diana offered:</p> <p>Okay. Usually what I do is I'll go through it. I'll read the source. I do this all online, so I'll go ahead and copy and paste from the source into a Google document just so that I have quotes if I want to go back and look at them.</p> <p>I separate them by sources, by primary and secondary and then by category, so a website dissertation or others. Then I'll go ahead and print them out. Then I go ahead and highlight things that I think are particularly important. Then I'll go ahead and jot down my comments and write things like that. ...Then I'll start building a story. I think especially for competition and for myself to build an argument it's good to build a story, so I'll go ahead and build it from the context. I usually have three main points and I'll build it from there. I'll try to build the story from my comments. I'll build a thesis and use my sources to support my thesis. I guess it's better to say, I use the sources to create a thesis. So my thesis supports the sources.</p>

(continued)

Participant	Statement
	Regarding evaluating sources Diana affirmed: I can very quickly decide whether a source is credible or not by just a quick scan of the author, title, website link, publisher. I can very quickly do that where before I used to really have to think about it and wonder whether it was credible or not.
4. Eliza	<p>When asked about writing a research paper Eliza stated:</p> <p>I guess the first time I did like an actual research paper that I remember was my sophomore year. It was for ... I was in a restaurant management class. We were doing applications, like what are they called? Resumes. We were doing resumes, so that was the first. It was so hard for me. I don't know why, but it seemed so hard, like I had the time. It just seemed difficult at the time, but now, now I could just,,,</p> <p>Kind of like putting it together or trying to think of volunteering or my credibility stuff, that I know and stuff, so yeah.</p> <p>In addition, Eliza shared:</p> <p>I actually, I remember in middle school, I think it was my sixth grade that I did ... Someone in the military or like in the war. Someone that did in the war, and I forgot his name, but it was a person, like a veteran. I did almost looked up everything that I know about him, or this specific person.</p>

Note: Response to question, “When completing projects, what steps do you take to find information? What process do you use for rewriting or paraphrasing your sources?”

The third theme is instructional and collaborative influences. This theme delved into how each participant interacted with learning and utilizing the research process. Table 12 reveals participants’ interactions with significant people who have assisted in their learning.

Table 12

Theme – Instructional and Collaborative Influencers

Participant	Statement
Michael	<p>Well, during third or fourth grade, I was introduced to computers and the internet, in general.</p> <p>I found that the internet is a really powerful tool to find information, and not just find it, but find it quicker</p>
Darius	<p>...my teacher taught me to research, go into depth, you know, more specific information.</p> <p>My English ... yeah, my English teachers mostly. And my mom, she's ... She goes to school to be a teacher. She's gonna be an English teacher, so that's pretty much helpful too.</p>
Diana	<p>It's Miss Sanders. She has been my sponsor since 9th grade, so I go to her for help. Sorry, not since 9th grade, but since 10th grade. I go to them for help. Also, a lot of the help I get is from online sources, so the competitions that I do for History Fair, so there are a lot of projects for me to go through and look at and see what they did.</p> <p>... He's graduated or moving on. He graduated but he is studying Physics at a pretty good school. Before, I didn't really think ... I've been into Physics since middle school but I didn't ever really think I could do it. Then I saw him from here get into a really competitive. Really good college, and that made me feel like I could do it.</p> <p>I switched abruptly from going into Economics. I wanted to work on Wall Street and go to Harvard and that's what I was gonna do. He started teaching me about the things that he encountered in college now that he's in college and he started talking to them about me and it made me realize how many things that there are for me to do and that I can take up. Independent projects and do them on my own. I don't necessarily have to follow the route of taking a bunch of AP classes to do well.</p>

(continued)

Participant	Statement
	That I can take classes outside at college. There's another instance this Summer. I went to a Physics, math, computer science, Astronomy program. It was residential and it was for 6 weeks. We did research there. We tracked an asteroid. We determined its orbit after coding some programs. The people there are ridiculously motivated. Also, ridiculously ambitious. They were just great people to be around.
Eliza	<p>Restaurant management, culinary. Culinary was the reason why I went to school. It was my favorite. My chef, she was awesome. She made me want to be a chef.</p> <p>When I was dropped out for basically almost a whole year out of school, so like after Christmas break, I just never went back. That was last year. So now, I came here in October. That was the first time I'm back at school. So that time being was very ... It was a huge reality check. I knew it was hard. Everyone said it's going to be as hard as it is. I lost my people skills. I only had interaction with one human for like that period of time, so being online was the only contribution to society I had, basically. It was a lot.</p>

Note: Response to question, “When completing research projects, who do you ask for assistance?”

The last theme explored, regarding using information literacy skills and preparedness, was researching for college and career. Participants answered question regarding readiness for life after high school graduation. Table 13 indicated responses revealed.

Table 13

Theme – Life after high school graduation – researching colleges and careers

Participant	Statement
1. Michael	<p>Well, I've taken dual credit classes, and at colleges, and what I find is that the professors, they give you the work, and they expect you to finish it, and understand it. I think high school, they don't do that. They want you to learn it, which is good. But I think they're holding our hands too much. So, yeah...I do think I'm prepared for ... I think ...</p> <p>Well, I want to make computers more accessible to people. Because I find that, like for example, I don't have like a computer at home. But I do have a mobile device, but I'd also like to like make the technology we have today, and make it better. Like advance humanity.</p>
2. Darius	<p>"I've researched it for college or jobs, or if the town ... like the college, but also research the town.</p> <p>"...I think that'd be good for looking for jobs, too, because now most things are online. You know what I mean? There's not a lot of paper applications and stuff, so if you just go in, "Are y'all hiring?" "Yeah, it's online," and then you don't know what to do or where to go, then that's an issue</p>
3. Diana	<p>When asked about readiness for after high school graduation, Diana shared:</p> <p>I definitely do think so. I would say that it is entirely because of History Fair. I have done personal interviews with people. I have gone to museums. I have met up with people in order to ... I have met with people who are from Russia or the Soviet Union era. I've talked to them about what their experiences were like so that I could use it in my project. I definitely do think that I am prepared to either find people who can help me, find sources or locations where I can go to</p>
4. Eliza	<p>I got accepted to Auguste Escoffier. I'm not sure if I've pronounced it right, but that's in Austin. I was all about them. I researched the school, what I could go for an interview. They called me on the regular. That's when I knew I got accepted because they did like a ... They sent someone to my school, and they did like a presentation on how amazing it is. Then I sent them my email and all that, and then they called me back. Like years later, and I'm like wow. You remember me.</p>

(continued)

Participant	Statement
	But I actually changed my career path to criminal justice. I want to be a probation officer now. Yeah, so now, I need to do research on that, actually. I know I need psychology and some type of ... Yeah, is it psychology? Yeah, I'm pretty sure it's psychology

Note: Response to questions, “How have you used the research process to research colleges and careers? Do you feel that you’ve been adequately prepared for life after graduation?”

Discourse Analysis. The second research question, How have sociocultural (e.g., family, social, cultural) factors influenced the perceptions of information literacy skills needed for job market or for college and career readiness?, was answered employing discourse analysis and specifically using three of Gee’s (2005) seven building tasks: (a) significance; (b) practices; (c) identity; (d) relationships; (e) politics; (f) connections; (g) knowledge. The following emergent themes: (a) motivating forces – internal and external; (b) participating in projects; and (c) familial, social, and cultural influencers were analyzed using *significance*—how did the participants’ languages connote important matters; practices, also described as *activities*—how language is enacted, and *relationships*—what are the various types of relationships with whom the participants communicate.

Gee’s (2005) first building task of significance in Table 14 revealed that interviewees’ motivation was derived from various entities, and the relevance participants assigned to job market and college and career readiness within their sociocultural sphere.

Table 14

Examples of Language Conveying Significance of Learning Information Literacy Skills

Respondent	Behavior or Word Phrase
Michael	<p>Well, I want to make computers more accessible to people. ... I'd also like to like make the technology we have today, and make it better. Like advance humanity.</p> <p>Well, I've taken dual credit classes, and at colleges, and what I find is that the professors, they give you the work, and they expect you to finish it, and understand it</p>
Darius	<p>Just to see if there's a lot of racism on there. You need to know about that stuff. And then in other cities, they have different laws and different things you can and cannot do. Just ... And when you go on vacation, you need to research the area you're living in, if it's a good area, if it's a bad area. Racism. If it's ... Racism is everywhere, but if it's more. You know, more like know where places to go and where not to go.</p> <p>I have three best friends and one of them has graduated high school already. He's already in college 'cause he's graduated. He's already in college now, so that's motivational to have people that around you that are going to college that are actually doing something, 'cause then it makes you wanna be ... 'Cause you know you are who you hang around with. It makes you wanna be better and wanna go to college and be more motivational. He</p>
Diana	<p>...in 7th grade, the summer of 7th grade where we went to this academic camp up in Sherman, Texas. The people who were in there had to have a certain SAT score so it was a different crowd of people who were there. That definitely made me realize who it was that I was competing with to get into college. There were people there who had their parents pay for a tutor to have them study for the SAT that they took to get in. Their parents were engineers and they spoke English and they were American. That really kind of shaped me.</p> <p>There was one time where we played this social cultural game down in the basement and our TA, she was studying women's studies. She had us lineup and she wanted us to take a step for every question that we answered a yes to. There were things like, "Do your parents speak English?" "Do you qualify for healthcare?" I remember these things,</p>

(continued)

Respondent	Behavior or Word Phrase
	<p>right? "Or is your first language Spanish, English or another language?" I forget what the other questions were but they stratified us into different levels and you could very obviously see that. At some point she asked white males to take a step up and everyone else stay behind because she wanted to show us that these are the things that we encounter in life. At that point I remember being there and I was like at the bottom of the pyramid. It's such a vivid memory and that was a really ... That had a really big impact on me.</p>
Eliza	<p>I'd say my sophomore year, I was really bad. I messed up my whole high school experience, basically. I wish I could tell myself ... I wish myself now could tell myself back then what to do and not to do.</p> <p>(Replying to motivation:)</p> <p>My boyfriend, actually. He's the one that actually got me enrolled here. He keeps me out of trouble. He's really good for me. He's really good.</p> <p>I like one-on-ones. I appreciate this. I actually learn and understand better if I just go up to the teacher and ask her myself, instead of like, "Now, does anyone have any questions?" And I was thinking my question. I'm saving it, so I can go up to her and ask her.</p> <p>But not everyone is that ... I don't want to say motivated but active, I'd say. Not physically active but interaction, active-wise. Like a lot of people don't want to speak in class. They just want to get through the day and get home.</p> <p>People might need that a little bit more, not confrontation, but a little one-on-one to actually help. Like I wish I had help my freshman and sophomore year, junior year, especially my senior year. I lost a lot of hope. When I was in school, I'm like, I know I'm not going to graduate. I'm not going to be surprised if I don't graduate. I just gave up on myself, honestly. I knew I was giving up.</p>

Note: Response to questions, "Thinking about your cultural and social surroundings, describe how your family and friends have helped you in your academic achievement? How did they influence you to succeed academically?"

Practices is the next building task analyzed, and Gee (2005) described practices as the activities that are enacted throughout the language. Practices were disclosed via

activities, Michael, Darius, Diana, and Eliza participated in, such as Science Fair, History Fair, and job searches. Table 15 demonstrates activities that effected participants' academic achievement.

Table 15

Examples of Language Conveying Practices of Using Information Skills Socioculturally

Participant	Practices
Michael	<p>So basically, if it's like a science fair...But like, for example, research papers, one year we had to do, "How is technology helping humanity advance?" And we wrote an article on space exploration and how technology is helping us reach further distances throughout our universe. So, yeah.</p> <p>Well, most of the time, we have kind of like the basic idea of how we want our research paper to look like. So, like in our first body paragraph, we talk about how technology is very useful, and how it's been helping NASA with space exploration. So that'd be like the first thing we researched, and then after that, we'd research how it can also save lives, and what not. So basically, chronological order.</p>
Darius	<p>In middle school. When I did the history fair, I did a website on civil rights and I did it individually on Martin Luther King. Everyone knows about Martin Luther King, but my teacher taught me to research, go into depth, you know, more specific information. About 8th grade, 8th grade I think that's when you really ... and then 9th grade, it's like okay. You put it to use. You know what I mean?</p>
Diana	<p>I started researching for competitions in sixth grade but I don't think I really understood what that meant, being able to pick out a primary source and understand that there's bias in it. I didn't really understand that.</p> <p>... a lot of the help I get is from online sources, so the competitions that I do for History Fair, so there are a lot of projects for me to go through and look at and see what they di</p> <p>I can go through their annotative bibliographies, look at what sources they chose and why they chose them, and look at how they used the sources that they did in the website. And that's how I guide myself.</p>

(continued)

Participant	Practices
Eliza	<p>I've taken business management and restaurant management and statistics and speech, all that. So you would think that would help me on paper kind of, but I can honestly say, I haven't learned a specific thing that I can ... You know? Like those classes would benefit me on paper, but in real life, it wouldn't really-</p> <p>Last year, I was also a senior. I actually dropped out, but I'm back. I actually was, last October I was signing up for FASFA, and I actually got accepted to this college in Austin, but I didn't graduate, so I didn't go. Then I actually had three jobs before, and they weren't online applications, but I do online applications, but they never seem to be that good. I never got like an application to hear me back.</p>

Note: Response to questions, “When completing research projects, what steps do you take to find information? Where do you look? When did your start learning and understanding the research process?”

For the building task of relationships, language that shared information on how family impacted the qualitative participants’ academic achievement was mined.

Participants also shared influences of other significant individuals influencing their lives.

Table 16 describes the relationship between each participant’s family with their academic achievement.

Table 16

*Examples of Language Conveying Relationships of Using Information Skills**Socioculturally*

Participant	Relationships
Michael	<p>Well, both of my parents are Hispanic, and they don't know much about computers, and all that. So I think that always trying to be very like correct with like, so I can answer the questions more often, and help them a lot more. So basically like my parents depend on me, to help them understand like different question that they have. Yeah</p> <p>Well, my family, they always push me. Like to be a better person, and to like be better than them. So, they've already set the standard, and as long as I'm over that, they're okay with me. So, they basically, they're basically helping me by encouraging me to do more. To do better.</p> <p>Well, the thing with friends is that you want to be like ... Well, in the group I'm in, you want to be like better than everybody else, so it's like basically like with any competition, you want to get like a great grade, but you also want to be better, have a better paper than your friends. So, I think having friends helping you with research paper, or being in a group together, it can help you. But it can also be bad because you could like sidetrack yourself, and you won't know how to like be able to control that. Most of the time.</p>
Darius	<p>Well, most of my inside family, like the people you live with: mother, sister, brother. They've all went to college but their moms, their sisters, they didn't. When we go to family gatherings and everything, they always tell the importance of going to college 'cause they haven't went and we see them struggle ...</p> <p>well, not struggle but not where they wanna be because they didn't go to college. So they help me by seeing both sides. This is what it looks like when you go to college, and this is what it looks like when you don't. You have to struggle to get there and make ends meet. You know, both are ... can be done, but seeing point of views helps you a lot.</p> <p>It's very motivational 'cause she finished college at 50. She went and then she stopped and then she went, but now she's finally did it ... has</p>

(continued)

Participant	Relationships
	<p>done it. I'm like, well if she can do it, I most definitely can. And 50, and it was an online course. It's hard online for her, 'cause you know, the computer don't be working and the internet. So, if she can do it under all them circumstances ... being a single mother, it's online, still working, bills, at 50 years old ... I most definitely can do it.</p> <p>My culture. I think my culture, the African culture, it helps me a lot. When we have Black History Month, they say all the facts on the announcements about what he have achieved, what we have done. That's very motivational as well. It's like, oh, I come from a culture that's so brilliant and creative and things like that. So, it gives me motivation, and again, if they can do it ... especially back then. There wasn't computers. You had to go look in the book and everything. If they can do anything like that, then I most definitely can. So, it's motivational.</p>
Diana	<p>Okay, my first language is Spanish. My parents only went to grade school. At some point, maybe 7th grade when I was taking ... Or 8th grade when I was taking Algebra and I needed help on it, I realized that I couldn't anymore ask my parents for help.</p> <p>I never really could because they only speak Spanish. I guess from an early age I had to learn to be independent. I think that, that has ... I think the fact that my parents didn't go to high school and they don't speak English has definitely made me ... Or forced me to be independent.</p> <p>School meetings I do that by myself. Or scheduling things, I do that by myself. Or college things, I do that by myself. I have their support but I've had to take a lot of initiative. I guess it's been both a good and a bad thing because it has forced me to be independent but I don't have their help. Not necessarily because they don't want to give it. But just because they can't tell me about their experience applying to college because they didn't.</p> <p>My parents are first generation immigrants. I'm a first-generation immigrant. I am a DACA student. The opportunities that are given to me I'm very grateful for them because I know that I wouldn't have them in Mexico. Like taking all of these AP classes. You don't do that in Mexico.</p>

(continued)

Participant	Relationships
	<p>Speaking English and having the opportunity to even apply and have some hope that I can get accepted to such good schools, has really been shaped by the fact that I am an immigrant and it makes me feel really grateful. It makes me want to take advantage of every opportunity and create opportunities for myself because I don't want the things that my parents have done to go to waste.</p> <p>I want to do well and represent I guess where I come from.</p>
Eliza	<p>I actually, I enrolled myself here, so I'm my own guardian. I don't live with my family currently. I haven't lived with them in a few years actually, since my dad, since I was a sophomore, and then my mom since like eighth grade. I'd say my sophomore year, I was really bad. They weren't very much a part of my schooling, I'd say. They weren't a part of my ... They weren't involved much.</p> <p>Then I'd say my junior year, junior year I was in Corpus Christi. It was an emotional year for me, but I played softball, and that was ... I went to school just for softball, so that was the only time I played. My family over there, they were really ... That was the best year I did in grades, just for softball. They encouraged me to do softball and encouraged me to keep my grades up for softball, so I could keep playing and do what I love. Those were just my relatives. That wasn't my immediate family.</p> <p>My dad, we're not on speaking terms right now, and my mom, we're like barely. We're kind of talking but like not on the everyday basis. My siblings, I'm the youngest out of five, so they ... We don't talk on a daily basis either, but I know they're there. We're always kind of spread out.</p>
<p><i>Note:</i> Response to question, "In what ways has your culture affected your desire to succeed academically?"</p>	

Mixed Analysis Results

Mixed methods research question. The following mixed methods research question was addressed to reveal a deeper understanding of the connection between the assessment and the perceptions:

According to Bandura's (1971) three key concepts: (a) children learn by observing, (b) children need a sense of accomplishment, and (c) children's behavior

change is not an indicator of learning. Integrating these three concepts, what is the relationship between perceptions of two groups of students; specifically, 12th-grade higher-achieving and 12th-grade lower-achieving students' information literacy skills and their information literacy assessment proficiency?

In executing a mixed-analysis of quantitative and qualitative data, Figure 5 is a chart of the sub-assessment scores for each participant. Table 17 indicates participants' responses regarding developing topic and identifying sources. Table 18 shows participants' responses relating to search strategies and evaluating resources, and Table 19 indicates each participants' responses about how they use information ethically and responsibly.

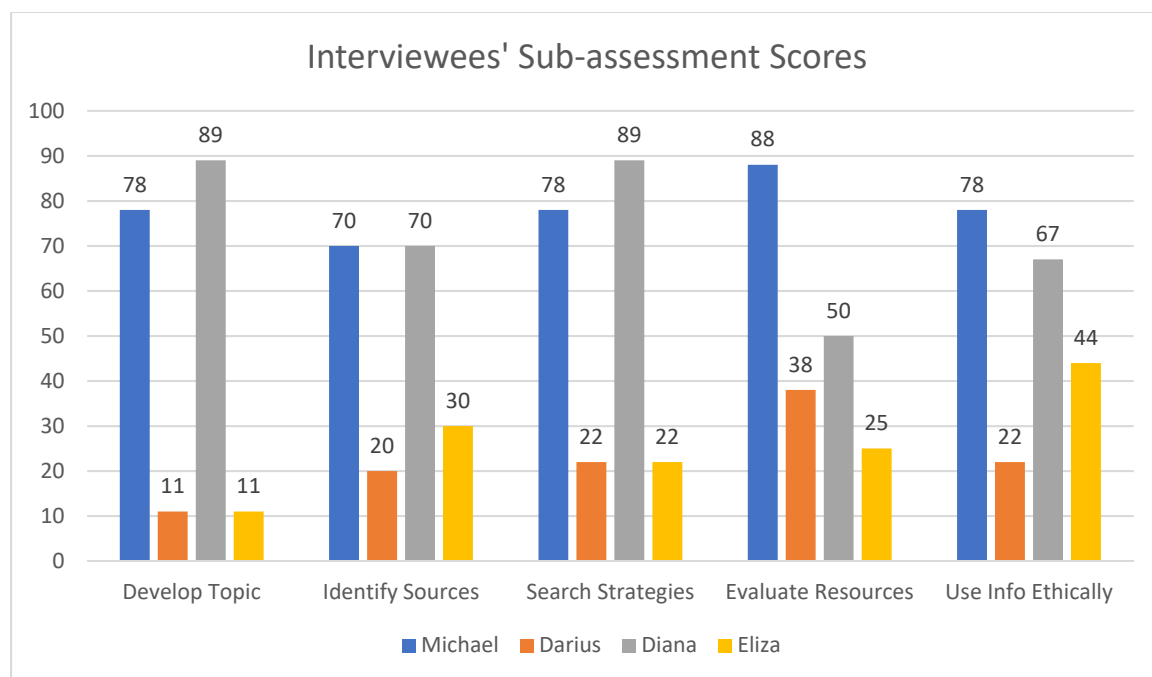


Figure 5. Interviewees' sub-assessment scores. This table displays the sub-assessment scores for each qualitative interviewee participant.

Table 17

Theme – Utilizing Information Literacy Skills – Develop Topic and Identify Sources

Participant	Statement
1. Michael	<p>Well, most of the time, we have kind of like the basic idea of how we want our research paper to look like. So, like in our first body paragraph, we talk about how technology is very useful, and how it's been helping NASA with space exploration. So that'd be like the first thing we researched, and then after that, we'd research how it can also save lives, and what not. So, basically chronological order.</p> <p>...for example, research papers, one year we had to do, "How is technology helping humanity advance?" we used a search engine and we also used websites where they only post like scientific articles.</p>
2. Darius	<p>In middle school. When I did the history fair, I did a website on civil rights and I did it individually on Martin Luther King</p> <p>I like to look at news sources 'cause you know that's a credible source</p>
3. Diana	<p>I started researching for competitions in sixth grade but I don't think I really understood what that meant, being able to pick out a primary source and understand that there's bias in it. I didn't really understand that.</p> <p>I didn't understand that a secondary source has its own analysis in it and it has its own bias too. Really I don't think I began to understand that until 9th, 10 grade.</p>
4. Eliza	<p>This year, I just finished an IPC research paper for which energy source is better. So, I looked at all the different types of energy sources, like renewable, fossil fuels, wind, thermal, and just basically which one is better, which one we should switch to or use more often in the whole world.</p>

Note: Responses to questions, "When completing research projects, what steps do you take to find information? Where do you look?"

Table 18

*Theme – Utilizing Information Literacy Skills – Search Strategies and Evaluating**Sources*

Participant	Statement
1. Michael	<p>I research like three or four different sources, because they could have like different points of views, and different information, and most of the time, one source would contradict what the other source would say. But then the other two sources would back one of the two, so yeah.</p> <p>Well, the most difficult part is narrowing down what information you want to keep in your paper and what information you don't need. Because most of the time, like I find I'm intrigued by what I read and I want it all in the paper. But you can't do that. You have to compact to what the assignment is listing.</p>
2. Darius	<p>Now I've found I've learned to give more information, where you just can't ... You can Google it and people are like, "Oh, that's what it is." You need to find the information and put it on your paper that you just can't Google it and there it goes. You need to put stuff that you actually have to read, and click this link, and then research this person and see when they were involved. So just the more information is better.</p>
3. Diana	<p>The first thing that I do is, I usually go to Wikipedia. I'll read it for an overview and I'll go down to the bottom of the page and there's a lot of sources there. A lot of them are primary and their linked online, so I can just go ahead and click them. Go through that.</p> <p>I do, do a Google search for them and I go through Google Books. Then I start going into maybe articles. Then I go ahead and I'll go to the Smithsonian AP Archives. I think I mentioned Google Books. I'll start going through there.</p>

(continued)

Participant	Statement
	I can very quickly decide whether a source is credible or not by just a quick scan of the author, title, website link, publisher. I can very quickly do that where before I used to really have to think about it and wonder whether it was credible or not
4. Eliza	<p>I was just looking online. We would go to like computer labs, and we'd just go online to like ... I would just grab sentences from website, from website. A lot of websites... I remember doing papers, but I just can't remember the topic or what class.</p> <p>I know some websites were not as good as others and some are not as accurate or recent. There's millions of websites. I would usually pick the first, the few first websites that would pop out. If they have reviews, or if I could see how many people visited this website so and so times, I would trust that more.</p> <p>I wouldn't exactly go to Wikipedia because I heard those are just opinions and sometimes not always facts. I would go to websites that are specifically just for that subject, like some type of science. It seems legit, like certified. It seemed very professional.</p>
Researcher	Do you remember how you went about writing the paper?
Eliza	I'll go off-topic, like how I was speaking to you, and now I'll go off-topic. But I would try to keep it in this one main idea, to get my point across. I would just try to kind of make it personal, like connect it to my life, how I see it in my everyday life.

Note: Responses to questions, "What do you find is the most difficult part of the research process? When you're completing your projects for a competition or otherwise, how do you find your information? Where do you look?"

Table 19

Theme – Utilizing Information Literacy Skills – Using Information Ethically and Responsibly

Participant	Statement
1. Michael	Well, one of the things is like don't plagiarize because ... I mean, you're assigned an assignment, but you have to be original about it. You can't copy off other peoples' work. Also, fact-checking yourself because you don't want to write a paper, and sort of seem contradictory to what you're trying to say in your paper. Well, I try to, if I'm reading an article, I try to write down what I perceive from the article, and then I re-read it again, and I try to like take it off from that.
2. Darius	...I read it and then I just, you know, kind of put it in my own words. Not so much the exact same thing, but I just would read it and I would add stuff to it that they don't have, maybe, or not use the things that they have and use something different, but still pertains to the information that you have.
3. Diana	As to whether I cite everything, I don't think that's ... The only places where that's been an issue is when I've use a photo and I'll upload it in and somebody will remind me that I didn't cite it, so I'll go back and do that. Usually personally in my set of documents, I usually do have everything cited. It's usually when I present it where I forget to include it.
4. Eliza	(This area was not specifically addressed by Eliza)
<i>Note:</i> Responses to questions, “What process do you use for rewriting or paraphrasing your sources? Describe your process for citing sources in your research projects?”	

Summary

Chapter IV began with a review of the purpose and goal of this research study, which was to explore and to compare the information literacy skills knowledge and

proficiency of 12th-grade students to their academic achievement. Quantitative research question and hypotheses were delineated, followed by quantitative results from the TRAILS online assessment. The second purpose was to ascertain perceptions of 12th-grade students' knowledge of information literacy skills for job market and for college and career readiness; in addition to their viewpoints regarding how familial, social, and cultural factors influence their academic achievement. A review of the qualitative research questions ensued, and qualitative results from four extreme-case interview participants were examined. Chapter IV ended with results from mixed methods analysis of the qualitative participants and their TRAILS results, and a summary. Chapter V commences with a review of this study, succeeded by quantitative results discussion, qualitative results discussion, implications for educational practices, and recommendations for future research. A summary concludes this study.

CHAPTER V

Discussion, Implications, and Recommendations

Introduction

In 2008, as indicated in TEA (n.d.) TEKS, secondary students are required to produce research projects in most core subject areas. According to the Texas College and Career Readiness Standards adopted by the Texas Higher Education Coordinating Board (2009), producing academically acceptable research projects entails utilizing information literacy skills. Therefore, students must: (a) recognize what information is needed; (b) locate the necessary information; (c) evaluate its credibility and reliability; and (d) employ the information within their project in an ethical manner. The Texas Higher Education Coordinating Board considers the utilization of these standards as an indicator of problem-solving and critical thinking skills for college and career readiness (EPIC, 2008). However, the problem is determining the proficiency level that has been attained by graduating 12th-grade students, to ascertain job market or college and career readiness. According to Gross and Latham (2012), “many students come to college without proficient information literacy skills” (p. 574).

Some research exists on information literacy skills and students’ lack of proficiency in transitioning from secondary to postsecondary education (e.g., Gross, Latham, & Armstrong, 2012; Smith, Given, Julien, Ouellette, & DeLong, 2013). However, scant research is available on information literacy skills proficiency at the secondary level, preparing students for the job market or college and career readiness (Kovalik, Yutzey, & Piazza, 2013). For students entering the workforce after graduation, information literacy skills are required for researching job openings and business-related

information for employment seekers (Inskip, 2015). As students enter college, they will most likely be faced with mining information sources for research projects and will generally need a good foundation to accomplish these tasks successfully.

The purpose of this mixed method study was two-fold. The first purpose was to explore and to compare the information literacy skills knowledge and proficiency of 12th-grade students to their academic achievement. This purpose was accomplished by comparing scores from an online information literacy assessment, TRAILS, to student collegiate and weighted GPAs. This research was in response to a deficit in research on information literacy skills proficiency at the secondary level, and specifically in a high-minority, low-socioeconomic urban school district. The second purpose was to ascertain perceptions of 12th-grade students' knowledge of information literacy skills for job market and college and career readiness; in addition to their viewpoints regarding how familial, social, and cultural factors influence their achievement. The secondary purpose was achieved via individual semi-constructed interviews of select participants. The purposes of the study were met by engaging the following research questions and hypotheses.

Research Questions

Quantitative research questions. The following quantitative research question addressed high-poverty, minority secondary students' scores on an information literacy skills assessment in comparison to grade-point average.

To determine if a correlation was present between information literacy skills proficiency and academic achievement as measured by GPA of 12th-grade high school students in a diverse school setting, the following research question was explored:

What is the relationship between knowledge of information literacy skills and academic achievement among 12th-grade students in a traditional comprehensive school?

Quantitative Research Hypotheses

The following two quantitative hypotheses were tested in this study:

1. A relationship exists between knowledge of information literacy skills and academic achievement among 12th-grade students in a traditional comprehensive school;
2. A difference exists in information literacy knowledge between higher-achieving and lower-achieving 12th-grade students in a traditional comprehensive high school on an information literacy assessment.

Qualitative research questions. The following questions were addressed after the quantitative phase by selected participants based on scoring criteria:

1. What are the perceptions of 12th-grade students in a traditional comprehensive school regarding obtaining information literacy skills for job market or for college and career readiness?
2. How have sociocultural (e.g., family, social, cultural) factors influenced the perceptions of information literacy skills needed for job market or for college and career readiness?

Mixed methods research question. The following mixed methods research question was addressed to reveal a deeper understanding of the connection between the assessment and the perceptions:

According to Bandura's three key concepts, children learn by observing, children need a sense of accomplishment, and children's behavior change is not an

indicator of learning. Integrating these three concepts, what is the relationship between perceptions of two groups of students; specifically, 12th-grade higher-achieving and 12th-grade lower-achieving students' information literacy skills and their information literacy assessment proficiency?

By meeting the two purposes of the study, three goals were fulfilled: (a) to add to the knowledge base; (b) to have a personal, social, institutional, and/or organizational impact; and (c) to understand complex phenomena. To assist practitioners in developing pertinent instructional strategies for information literacy, the first goal of adding to the knowledge base was to understand and to compare information literacy skills knowledge and information literacy skills proficiency among 12th-grade students in a high-poverty, high-minority urban school district. This comparison, by using an information literacy skills assessment, was to ascertain job market or college and career readiness for employing information literacy skills after high-school. Because of findings of this assessment, a connection was made to the second goal of having an organizational impact. To effect change by helping to increase information literacy skills in the district where I am employed, this study provided current research that might support the need for including information literacy skills as part of the secondary curriculum for all students. Martin, Garcia, and McPhee (2012) noted that the Commission on the Future of Higher Education in 2006 and the National High School Summit Report of 2005 each documented the rising urgency of preparing high school students for college coursework. The suggested pathway to accomplish this task is by strengthening the school curriculum in instructing information literacy skills and enhancing the partnership between secondary and postsecondary institutions, to prepare college bound students (Martin et

al., 2012). Effecting organizational change within the district could mean formulating K-16 collaborations between school librarians and area university academic librarians, to enhance information literacy preparedness for our students.

In addition, by using a social learning lens via application of Vygotsky's (1978) Sociocultural Theory and Bandura's (1971) Social Learning Theory, the third goal of understanding complex phenomena was to comprehend how students in low-socioeconomic, high-minority urban high schools are academically impacted by familial, social, and cultural factors. Goal three was accomplished by analyzing participants' information literacy skill assessments, GPAs, and extreme-case participants' perceptions of their information literacy skills via interviews, to determine how proficiency impacts their academic achievement. The purpose of this mixed methods study was to assess information literacy skills, as well as, to explore participant perceptions of job market and college and career readiness.

Discussion of Results of Data Analyses

In this mixed methods research study, survey data and interview responses were collected to provide comprehensive data analyses of participant assessments and participant perspectives on information literacy knowledge (Creswell, 2002). Quantitative and qualitative data for this study were collected sequentially, and subsequently analyzed consecutively. The summary of results will commence with the quantitative portion, immediately followed by a summary of the qualitative and mixed analysis findings. The summary of results includes Step 11 and Step 12 of Collins et al.'s (2006) 13-step mixed method process: (a) Step 11—interpreting the mixed research findings and (b) Step 12—writing the mixed research report.

Quantitative findings. The TRAILS, the quantitative tool of this mixed methods study, is a 45-question online multiple-choice information literacy assessment that was created using the American Association of School Librarians' (AASL) Standards for the 21st-Century Learner (TRAILS, 2016). The TRAILS is publicly funded and is offered to educators at no-cost (Schloman & Gedeon, 2007). According to Schloman and Gedeon (2007), the TRAILS was “designed as a classroom tool that enables a library media specialist to easily obtain a snapshot of skill levels in order to better tailor instruction efforts (p. 45). The online assessment evaluated the following five information literacy research categories: (a) developing the research topic; (b) identifying possible sources; (c) developing, using, and revising strategic searches; (d) evaluating sources and information; and (e) recognizing responsible use of information ethically and legally (TRAILS, 2016). The assessment included 45 multiple-choice questions, with four answer choices per question. Students were scored on the percent of total correct responses.

The objective of this study was to determine if a relationship existed between knowledge of information literacy skills and academic achievement among 12th-grade students in a traditional comprehensive high school. One hundred-twenty-nine high-poverty, minority students enrolled in a Title I high school were assessed on their information literacy skills employing the Tool for Real-time Assessment of Information Literacy Skills. Using results of the score of total correct responses from each TRAILS assessment, a comparison was made to each student's collegiate and weighted GPAs to determine if there was a correlation. This correlation was performed answering the research question to determine if: (a) a relationship existed between knowledge of

information literacy skills and academic achievement among 12th-grade students in a traditional comprehensive school and (b) a difference existed in information literacy knowledge between higher-achieving and lower-achieving 12th-grade students in a traditional comprehensive high school on an information literacy assessment.

Findings indicate there was a correlation between the TRAILS scores and academic achievement based on collegiate and weighted GPAs. Most students achieving higher TRAILS scores also correlated with earning a higher GPA, and the majority of students receiving the lowest TRAILS scores similarly were associated with lower grade point averages. Males scored higher for total correct, while having a slightly lower GPA. The female highest collegiate/weighted GPA was 3.98/7.76, respectively; however, the participant's TRAILS score, while at the higher end of correct score percentages, was slightly lower amongst male and female students. Overall, male and female participants demonstrated a positive relationship between the degree of the TRAILS score percentage and collegiate/weighted GPA ranking. The English or Spanish home language indicators for each participant revealed a correlation between level of the TRAILS score and collegiate/weighted GPA scales; however, there was no substantial difference between the level of correlation among the two home languages.

Analysis of each of the five sub-assessments examined: (a) developing the research topic; (b) identifying potential sources; (c) developing, using, and revising strategic searches; (d) evaluating sources and information; and (e) using information responsibly, ethically and legally, corresponded to the total score findings, validating a relationship between information literacy skills and academic achievement. Nine questions were included in each sub-assessment category, and all findings substantiated

both hypotheses. The first hypothesis signified a relationship exists between knowledge of information literacy skills and academic achievement among 12th-grade students in a traditional comprehensive school. The second hypothesis corroborated a difference exists in information literacy knowledge between higher-achieving and lower-achieving 12th-grade students in a traditional comprehensive high school on an information literacy assessment.

Qualitative Findings. Following the quantitative phase of this mixed methods study, four participants were selected using extreme case scoring criteria. Two students were selected from each of two TRAILS categories—scores over 70% and scores under 30%, to participate in a 30-minute interview. The four individual semi-structured interviews sought to answer the following qualitative questions:

1. What are the perceptions of 12th-grade students in a traditional comprehensive school regarding obtaining information literacy skills for job market or for college and career readiness?
2. How have sociocultural (e.g., family, social, cultural) factors influenced the perceptions of information literacy skills needed for job market or for college and career readiness?

To address the first research question, themes revealed from interview data were: (a) comprehending information literacy; (b) utilizing research process; (c) instructional and collaborative influencers; and (d) life after graduation. First, each participants was asked to define the term *Information Literacy*. To ensure confidentiality, pseudonyms were used for all participant names.

Comprehending information literacy. Michael, a male of Hispanic ethnicity whose home language was Spanish, was the first participant interviewed. Michael had a collegiate GPA of 3.16 and a weighted GPA of 5.86 and scored 78% on the TRAILS assessment, answering 35 of the 45 questions correctly. When addressing the first theme of comprehending information literacy Michael shared a rudimentary understanding of information literacy as, “Well, it's basically like being able to read. So, you read information and you understand what it means.” Even though Michael’s definition was basic, he did express in his interview an understanding of the information literacy process. Michael’s highest score on the sub-assessment was evaluating resources with 88% of that category’s questions answered correctly

Darius, an African-American male, scored 22%, answering 10 questions correctly. At the lowest end of the TRAILS score, Darius has a 2.40 and 4.64 collegiate/weighted GPA, respectively. He responded to defining information literacy as:

When I hear the word "information", I think about school. I think about me doing a research or a paper. I think about English class, to be specific. Yeah, just researching about a specific type of person, or something like a project.

Darius scored lowest in develop topic at 11% correct of the 9 questions for that category.

Diana was the next interviewee. Diana held a 3.98/7.76 collegiate/weighted GPA and answered 73% of the 45 TRAILS questions correctly. Diana’s definition of information literacy revealed:

I think of information literacy as being able to navigate the Internet because the Internet is where I get most of my information from. It's the easiest, fastest, I

think the most reliable way to get as many sources as I feel like I need to from different perspectives. I think that navigating the Internet is navigation literacy. Navigating the Internet is part of understanding information literacy; however, information literacy encompasses other literacies. According to Eisenberg et al. (2004), negotiating complex information formats requires skillfully comprehending associated information literacies, such as computer, visual, and digital.

Eliza scored 27% on the TRAILS assessment and carried at 2.24 GPA; and at the time of the assessment, there was no weighted GPA recorded for her. Eliza had recently returned to school after dropping out the previous year. When asked to define information literacy Eliza stated:

I think of like the whole genre of like writing and books and just literature itself. When probed again asking what the word ‘information’ meant to her, Eliza responded:

“Like data or surveys, kind of.”

At that point in the interview, I explained that information literacy related to constructing research. Eliza’s lowest score was 11% for develop topic. Figure 6 represents key responses among the four participants regarding comprehending information literacy.

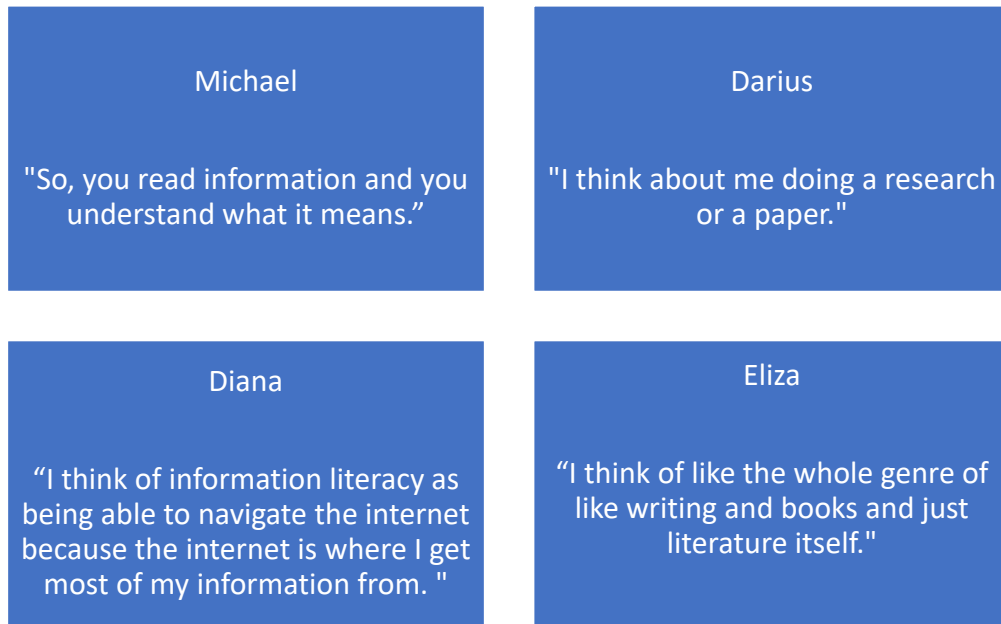


Figure 6. Key responses from interviewees when asked to define the term information literacy.

Utilizing the research process. The second theme of utilizing the research process, Michael stated he uses the Internet and he finds it “is a really powerful tool to find information, and not just find it, but find it quicker.” Michael also stated, “I use the information that I find and I find a way to apply it to my like paper, and I try to credit them, as well because you don't want to be plagiarizing.” This statement corresponds to Michael’s score of 78% for using information ethically and responsibly. Part of the research process is selecting and deselecting resources. To this point, Michael shared:

The most difficult part is narrowing down what information you want to keep in your paper and what information you don't need. Because most of the time, like I find I'm intrigued by what I read and I want it all in the paper. But you can't do that. You have to compact to what the assignment is listing.

This statement is analogous to Michael’s score of 78% for develop, use, and revise search strategies.

Darius revealed when utilizing the research process for finding credible sources and understanding reliability and credibility of sources:

I like to look at news sources 'cause you know that's a credible source... I think understanding research is good 'cause knowledge is power. You know, if you know what you're talking about ... Everyone wants to say their side of the story but they really don't know what they're talking about. So, with Trump ... Everyone hates Trump, but I don't really speak on it because I don't know. I feel like you should do your research. You should know how to research so when stuff comes up, you could voice your opinion... But if it's a matter that I wanna know, then I'm lucky enough to know how to do the research and find out.

Darius substantiates understanding credible resources with his highest score of 38% for evaluating sources and information.

Diana described part of her search strategies as:

The first thing that I do is, I usually go to Wikipedia. I'll read it for an overview and I'll go down to the bottom of the page and there's a lot of sources there. A lot of them are primary and they're linked online, so I can just go ahead and click them. Go through that.

I do, do a Google search for them and I go through Google Books. Then I start going into maybe articles. Then I go ahead and I'll go to the Smithsonian AP Archives. I think I mentioned Google Books. I'll start going through there.

Diana's highest score of 89% was in develop, use, and revise search strategies consistent with the category of develop topic.

Eliza recalled instances where she was required to do a research project, and her process consisted of, "...just looking online. We would go to like computer labs, and we'd just go online to like ... I would just grab sentences from website, from website. A lot of websites..." When Eliza was asked how comfortable she was searching for information on the Internet, she responded, "I feel confident sometimes, but over the years, I know some websites were not as good as others and some are not as accurate or recent. There's millions of websites." However, Eliza recognized the importance of credibility and reliability in research when she stated,

I wouldn't exactly go to Wikipedia because I heard those are just opinions and sometimes not always facts. I would go to websites that are specifically just for that subject, like some type of science. It seems legit, like certified. It seemed very professional.

Eliza scored highest at 44% for using information responsibly, ethically, and legally, and second highest for evaluating sources and information.

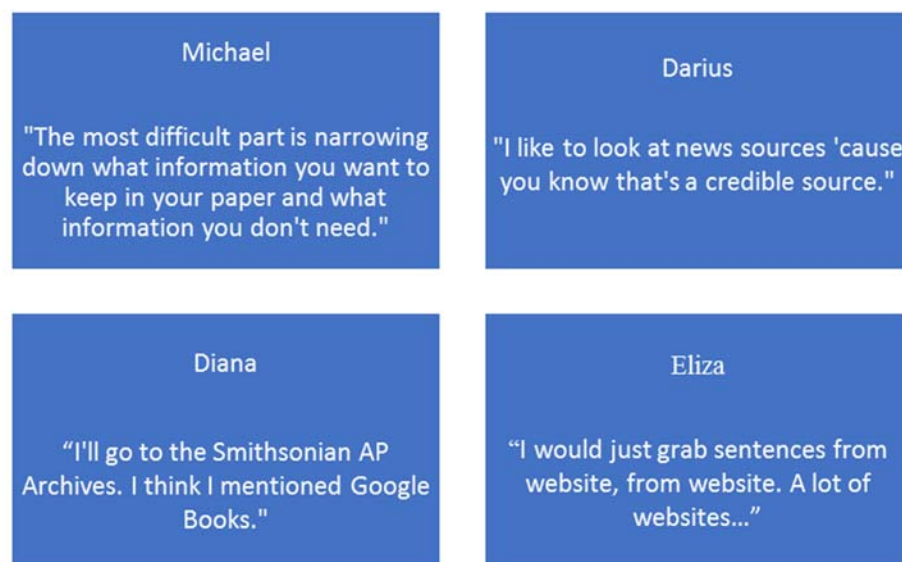


Figure 7. Responses from participants about utilizing information literacy. This graphic illustrates interviewees' key responses to questions on how they use information literacy skills.

Instructional and collaborative influencers. The next theme of instructional and collaborative influencers, indicated educators, such as History Fair/Science Fair sponsors/teachers, or close friends influencing skills participants used when researching. Michael shared, “I’ve taken dual credit classes, and at colleges, and what I find is that the professors, they give you the work, and they expect you to finish it, and understand it.” Darius stated his English teacher was instrumental in teaching him research skills, and Diana’s support stemmed from her History Fair sponsor. Eliza also indicated,

Culinary was the reason why I went to school. It was my favorite. My chef, she was awesome. She made me want to be a chef. Being a chef, I was actually researching salaries and where they would be located best and like how to start off, like their business or somewhat.

Despite the dichotomous scores between higher- and lower-achievers, there was an attachment to an educator, perhaps indicative of opportunities to make a difference.

Job market or college and career readiness. The last theme explored, answered the first research question, What are the perceptions of 12th-grade students in a traditional comprehensive school regarding obtaining information literacy skills for job market or for college and career readiness? The students’ responses centered on the perceptions of their readiness for college and career as related to their information literacy skills. When responding to the question of being adequately prepared for college research, Michael ascribed his readiness to taking dual credit courses at a community college, and replied,

I do think I'm prepared for ... I think ... Like I'm not sure about like the other students at our school, because I find that most of them, they only go through one

or two articles, and then they're like, 'Oh, well, that's it. I found my information.'

I don't think that's like, that's healthy for their learning.

Darius responded that he intends to continue to post-secondary, "I'm a smart student, but I'm a horrible test taker... I was like, 'I ain't gon' make it. My SAT scores.' But going more into depth about this school and what they do and find out that helps me now." Darius was specifically referring to a university which has a program for students not scoring well overall on the SAT test.

Diana answered,

I definitely do think so. I would say that it is entirely because of History Fair. I have done personal interviews with people. I have gone to museums. I have met up with people in order to ... I have met with people who are from Russia or the Soviet Union era. I've talked to them about what their experiences were like so that I could use it in my project. I definitely do think that I am prepared to either find people who can help me, find sources or locations where I can go to.

(Since this interview, Diana has been accepted to attend Massachusetts Institute of Technology [MIT], Columbia, Harvard, and Yale in the fall).

Eliza revealed during the interview that she had dropped out the previous year, and shared:

I wish I talked to my counselor more often in the previous years to actually keep me on track. I know I'm on track, to keep me in my lane. I know I'm on the right track, so I cannot be stressing the whole year and be thinking, what if I'm not doing this right? What if I'm not going to graduate? What if everything's wrong? And I just messed up from the beginning.

Eliza stated she plans to stay in school, and replied when asked about graduation, “Yes. I’m going to be ... I’m excited. I am. I’m going to be ready. I’m going to be prepared.”

(Since the interview, Eliza has increased her collegiate GPA to 3.37 and has established a weighted GPA of 5.63).



Figure 8. Responses from participants about college and career readiness. This figure illustrates responses from qualitative participants when asked if they were ready to transition to the job market or to college and career.

Significance. Three of Gee’s (2005) seven building tasks were used to analyze discourse from the four participants for the second qualitative research question, How have sociocultural (e.g., family, social, cultural) factors influenced the perceptions of information literacy skills needed job market or for college and career readiness? Using Gee’s task of *significance* — how did the participants’ language connote important matters, interviewees articulated motivating forces, whether internal and external, playing a consequential role in their employing information literacy skills. Michael imparted of

importance to him was, “to make computers more accessible to people.” Darius stated researching cities “to see if there's a lot of racism... You need to know about that stuff. And then in other cities, they have different laws and different things you can and cannot do.”

Diana voiced significance surrounding an incident that affected her, when she remembered an incident that occurred during 7th-grade. Diana was selected to attend a camp based on SAT scores. She reflected,

That definitely made me realize who it was that I was competing with to get into college. There were people there who had their parents pay for a tutor to have them study for the SAT that they took to get in. Their parents were engineers and they spoke English and they were American. That really kind of shaped me.

The significance of Eliza’s motivating force was expressed as,

I'd say my sophomore year; I was really bad. I messed up my whole high school experience, basically. I wish I could tell myself ... I wish myself now could tell myself back then what to do and not to do.”

As demonstrated via each respondent’s verbiage, significance was connoted through language of what mattered to them.

Activities. Gee’s (2005) second task was analyzed through the lens of activities or practices language that implied important matters. When asked how participating in Science Fair helped with research skills, Michael responded, “It's helped a lot. I mean, it teaches us I think researching. It teaches us more than what teachers would teach us in their classroom.” Darius participated in History Fair in middle school, but discontinued during his high school years. However, he also verbalized activities that mattered stating,

When I did the History Fair, I did a website on civil rights, and I did it individually on Martin Luther King. Everyone knows about Martin Luther King, but my teacher taught me to research, go into depth, you know, more specific information.

Diana stated, “I started researching for competitions in sixth grade and continued participating in History Fair throughout high school.” She continued, “... a lot of the help I get is from online sources, so the competitions that I do for History Fair, so there are a lot of projects for me to go through and look at and see what they did.”

Relationships. Relationships was the last building task analyzed examining language, signifying the importance of family, social, and cultural influences. Michael noted the importance of his parents when he stated:

Well, both of my parents are Hispanic, and they don't know much about computers, and all that. So, I think that always trying to be very like correct with like, so I can answer the questions more often, and help them a lot more. So basically, like my parents depend on me, to help them understand like different question that they have... Well, my family, they always push me. Like to be a better person, and to like be better than them.

Darius also expressed a strong connection with the relationship between him and culture. Darius shared:

My culture. I think my culture, the African culture, it helps me a lot. When we have Black History Month, they say all the facts on the announcements about what we have achieved, what we have done. That's very motivational as well. It's like, oh, I come from a culture that's so brilliant and creative and things like that.

So, it gives me motivation, and again, if they can do it ... especially back then.

There wasn't computers. You had to go look in the book and everything. If they can do anything like that, then I most definitely can. So, it's motivational.

During the interview, Diana shared that she was a Deferred Action for Childhood Arrivals (DACA) student. Articulating the relationship shared with her parents, Diana expressed:

Okay, my first language is Spanish. My parents only went to grade school. At some point, maybe 7th grade when I was taking ... Or 8th grade when I was taking Algebra and I needed help on it, I realized that I couldn't anymore ask my parents for help. I never really could because they only speak Spanish. I guess from an early age I had to learn to be independent. I think that, that has ... I think the fact that my parents didn't go to high school and they don't speak English has definitely made me ... Or forced me to be independent.

Eliza expressed how her sociocultural relationships have shaped her, as well. Eliza revealed the following:

I actually, I enrolled myself here, so I'm my own guardian. I don't live with my family currently. I haven't lived with them in a few years actually, since my dad, since I was a sophomore, and then my mom since like eighth grade. I'd say my sophomore year, I was really bad. They weren't very much a part of my schooling, I'd say. They weren't a part of my ... They weren't involved much.

As demonstrated by participant responses, family, social and cultural influences impacted Michael, Darius, Diana, and Eliza during their secondary years of learning. According to Welton and Martinez (2014), "For a majority of students, family members, many of who

lacked a college education themselves, were driving forces behind students' college aspirations" (p. 213).



Figure 9. Responses from participants on the significance of their relationships. This figure illustrates the relationships that were instrumental in shaping the participants.

Mixed Analysis Findings

The mixed analysis of the TRAILS assessment and interviews from the four participants, examined the following mixed methods research question: according to Bandura's (1971) three key concepts, children learn by observing, children need a sense of accomplishment, and children's behavior change is not an indicator of learning. Integrating these three concepts, What is the relationship between perceptions of two groups of students; specifically, 12th-grade higher-achieving and 12th-grade lower-achieving students' information literacy skills and their information literacy assessment proficiency?

Michael, Darius, and Diana have each participated in History Fair and/or Science Fair throughout their secondary education. Perhaps, their participation accounts for understanding the basics of completing the research process based on Bandura's concepts. Michael, Darius, and Diana each would have had opportunities to observe from their History Fair/Science Fair sponsor or teacher, and could have received a sense of accomplishment from participating and earning awards; however, participatory behavior was not an indicator of their learning. Eliza noted she learned best one-on-one, she felt accomplished when she was accepted into culinary school, and behavior of dropping out of school was not a learning indicator for her. Nevertheless, proficiency levels exist between each of them, as indicated by their TRAILS assessment score. Although each interviewee indicated they "looked-up" information on the Internet, both Michael and Diana expressed the most details in their process.

In Michael's process, he indicated he researches several sources. He admitted, "The most difficult part is narrowing down what information you want to keep in your paper and what information you don't need." Diana related, "...once I have narrowed down my books or my sources, I'll go down to usually the Houston Public Library or Rice." She continued explaining:

I separate them by sources, by primary and secondary and then by category, so a website, dissertation or others. Then I'll go ahead and print them out. I can very quickly decide whether a source is credible or not by just a quick scan of the author, title, website link, publisher. I can very quickly do that where before I used to really have to think about it and wonder whether it was credible or not.

Whereas, Darius and Eliza each described their process in different terms. Darius stated, “I like to look at news sources 'cause you know that's a credible source. Stay away from Wikipedia and all that. I like news sources, newspapers. Just stuff that's credible.” Eliza disclosed when researching information for a science project:

I wouldn't exactly go to Wikipedia because I heard those are just opinions and sometimes not always facts. I would go to websites that are specifically just for that subject, like some type of science. It seems legit, like certified. It seemed very professional.

When information literacy scores were compared to perceptions of information literacy skills, the higher-achieving participants expressed their process in a more informative manner and delivered more information than the lower-achieving students.

Connection of Results with Existing Literature

As indicated in the literature review, there have been many definitions of information literacy throughout the years. However, ALA (1989) in the final report of the Presidential Committee on Information Literacy, defined information literacy as a set of four skills requiring individuals to: (a) recognize, (b) locate, (c) evaluate, and (d) utilize information effectively. American Association of School Libraries (2017) developed a new Standards Framework for Learners encouraging students to critically think about their research process and identifying sources. The standards’ tenets are to; (a) inquire, (b) include, (c) collaborate, (d) curate, (e) explore, and (f) engage. The six standards are compared to the five sub-assessments in Table 20.

Table 20

American Association of School Library teaching and learning standards

AASL Standard (2017)	TRAILS sub-assessment
INQUIRE - Build new knowledge by inquiring, thinking critically, identifying problems, and developing	Develop a topic Identify Potential Sources
INCLUDE - Demonstrate an understanding of and commitment to inclusiveness and respect for diversity in the learning community	
COLLABORATE - Work effectively with others to broaden perspectives and work toward common goals.	Develop, Use, and Revise Search Strategies
CURATE - Make meaning for oneself and others by collecting, organizing, and sharing resources of personal relevance.	Evaluate Sources and Information
EXPLORE - Discover and innovate in a growth mindset developed through experience and reflection.	
ENGAGE - Demonstrate safe, legal, and ethical creating and sharing of knowledge products independently while engaging in a community of practice	Recognize How to Use Information Responsibly, Ethically, and Legally

Note: Adapted with permission from AASL Standards Framework for Learners by ALA, 2017, Chicago, IL: American Library Association.

Quantitative results connection. The five sub-assessments parallel five problem areas students have using information literacy skills. According to Owen (2010) students were challenged in: (a) general knowledge deficiency in that “students don’t know what they don’t know” (p. 21); (b) research topic and questions deficiency for not adhering to a research process; (c) web-search deficiency and lack of ability to conduct academic

searches; (d) evaluating information non-critically using nonacademic over academic articles, and (e) using information inefficiently and lacking the ability to synthesize information. These deficiencies as reported by Owen (2010) were evident in the participants' responses. Fifty-eight percent of questions labeled under develop topic were answered correctly. Scores were consistent with the sub-assessment category of evaluating sources and information, which was another area indicated by Owen (2010) as being problematic for students. Identifying potential sources was the lowest scored sub-assessment at 40%. According to Head and Eisenberg (2009), not understanding how to process academic sources ultimately influences students to utilize familiar sources, such as Google, for research projects, as opposed to reliable sources. Despite being digital natives, many students are not proficient in differentiating between types of resources nor can they successfully evaluate credible and reliable sources (Islam & Murno, 2006).

Qualitative results connection. Each of the qualitative participants indicated they do their research online, and little was mentioned about utilizing print sources. As the review of literature concedes, "With the seductiveness of the Internet added to the problem, it has become one of education's greatest challenges to teach students the skills needed to test the reliability, currency, and relevance of the information they find" (Breivik, 2005, p. 22). This sentiment is continued by Saunders et al. (2017) who proclaimed in a Pew Research Center study, "middle and high school students conduct research almost exclusively through free online Web services" (p. 277).

Even though databases are available to these students at school, when speaking of using the school, public or university libraries, other than Diane, none of the participants admitted to researching through their district's databases. Purcell, Brenner, and Rainie

(2012) declared Google and online encyclopedias, such as Wikipedia, were consumed most often by students, with Google being used at 94% and Wikipedia being used at 75% of the time for research. When using online sources to uncover credible information, Horrigan and Gramlich (2017) theorized 75% of Hispanic students and 70% of Black students desired more training. The desire for more training was reinforced when Averill and Lewis (2013) reported students they paneled “wished they had received additional instruction in the research process at the secondary level or that they had paid more attention to the instruction they were given” (p. 114). Despite access to myriad information sources, students have a limited propensity for finding, evaluating, and applying information (Averill & Lewis, 2013).

Connection of Results with Theoretical Framework

Through a social learning lens, via application of Vygotsky’s (1978) Sociocultural Theory and Bandura’s (1971) Social Learning Theory, study results revealed how students in low-socioeconomic, high-minority urban high schools are academically impacted by familial, social, and cultural factors. Michael, Darius, Diana, and Eliza shared stories of how their culture or family impacted their learning. Vygotsky’s (1978) ZPD is defined as, “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance, or in collaboration with more capable peers” (p. 86). The concept of ZPD was manifested when each participant discussed working together with other students or teachers on projects. Through sociocultural connectivity, integrating family, social, and cultural factors, students might indeed discover, “learning awakens a variety of internal

developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers..." (Vygotsky, 1978, p. 90),

Implications for Policy and Practice

Findings from this research were presented to key school district personnel, including the district's library services program director, to determine whether the TRAILS assessment is a viable tool for our district, and in particular, our demographics. Additionally, findings from this study will be examined to assess information literacy instruction opportunities within the district. Moreover, findings can be used to discuss the possibility of developing a sociocultural information literacy assessment that is relevant to my school district's student population. By developing a more sociocultural assessment of information literacy skills, based on cultural experiences, when in a school or district that is largely of another diverse culture, results might ascertain skill deficiencies more accurately. Perhaps future instruction can be targeted to guarantee students are more information literate for job market and college and career readiness supported by their experiences. The analyzed data from this research can subsequently be shared with district educators to improve ways of teaching information literacy skills in a culturally sensitive way.

However, before determining the necessity of a socioculturally relevant information literacy assessment, districts must decide how information literacy skills are to be included within curriculum and instruction. Throughout each of the participants' responses on utilizing the research process, instructional and collaborative influencers, and job market and college and career readiness, no student indicated instruction from their teacher or librarian on learning information literacy skills. As previously noted,

TEA's, (n.d.) TEKS, established secondary students are required to produce research projects in most core subject areas. However, according to Gross and Latham (2012), "many students come to college without proficient information literacy skills" (p. 574).

In addition, if students are to have a more streamlined transition from secondary to postsecondary education, significant collaborations should be established. Hull and Taylor (2003) proposed changes in information literacy skills instruction and additional communication between secondary and higher education schools. The American Association of School Librarians and the ACRL each have standards illustrating the capabilities of an information literate person; however, according to Callan and Kirst (2008), "perhaps one of the reasons for the skills gap between high school and college is the fact that student standards are established in separate orbits. K-16 faculty members rarely work together on standards, curricula or assessment" (p. 3). Establishing strong K-16 collaborations between local schools and universities might result in stronger information literacy skills of incoming college freshmen or for individuals going directly into the workforce.

Recommendations for Future Research

For Step 13, the final step of the 13-step mixed method typology, Collins et al. (2006) stated, "The report writing step leads to a reformulation of the research questions for subsequent phases or studies" (p. 72). Reformulating the research questions for this study would mean to inquire why there are differences in information literacy skills among secondary students, and how information literacy skills can be taught for students to be prepared for the job market or be college and career ready. Further research is needed in secondary schools to determine the consistency of instruction given to students

and by whom. Myriad research exists on students who have transitioned from high school to college; however, little research exists on students' preparation while in secondary school and even less research on schools' curriculum mandated requirements. I assessed skills and perceptions; however, to obtain a complete image of why students are not ready, systemic research from classroom to school district is important in understanding why students are ill-prepared for academic research. Not only are students' perceptions important, but high school teachers' perceptions of student expectations versus actual student compositions are integral to understanding how to address the information literacy problem. Analyzing districts' scope of lessons to be taught and the sequence in which the information should be taught, relating to information literacy skills, would contribute to the body of research to assist in uncovering an instructional solution.

Summary

Understanding gaps in knowledge and in proficiency of information literacy skills allows school librarians in high-poverty, high-minority urban secondary schools to assist students in becoming more information literate for the job market and college and career readiness. Vygotsky (1978), in his sociocultural theory, indicated learning is a social event and happens when interaction between the learner and other people in their surroundings occur. Therefore, collaborations in information preparedness among public school librarians, teachers, and postsecondary academic librarians might ensure incoming college freshmen are equipped with essential information literacy skills when transitioning to postsecondary institutions.

As a librarian, teaching individuals to become self-sufficient learners who ethically assemble and utilize credible, reliable information for academic and personal research is my primary teaching objective. My belief is all students graduating from secondary institutions should be information literate, regardless if they are directly entering the job market or continuing into higher education. However, as educators we must instruct students how to recognize the significance of understanding what information literacy entails. The American Association of School Librarians (2011) asserted, “Urban school librarians serve a disproportionately high number of minority students” (p. 2). According to Palardy et al. (2015), “American high schools are highly segregated by race/ethnicity, socioeconomic status, and English language status” (p. 1). Due to these factors, minority and low-socioeconomic students’ actions and academic performances are adversely affected because of the tendency for poor Hispanic students and poor Black students to attend segregated schools (Palardy et al., 2015). As a librarian teaching at a high-poverty, high-minority school, ensuring my students are information literate is fundamental because as Owens (1976) declared:

beyond information literacy for greater work effectiveness and efficiency, information literacy is needed to guarantee the survival of democratic institutions. All men are created equal but voters with information resources are in a position to make more intelligent decisions than citizens who are information illiterates. (p. 27)

By becoming more sociocultural-minded teachers, perhaps educators can build stronger relationships in low-socioeconomic, urban school districts. Stronger relationships may help produce critical thinkers who will, in turn, be able to make connections with

information via inquiry and investigation. Thus, forging stronger information literacy skills to ensure job market and college and career readiness; consequently, generating an information literate citizenry.

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APPENDIX A



Institutional Review Board
Office of Research and Sponsored Programs
 903 Bowers Blvd, Huntsville, TX 77341-2448
 Phone: 936.294.4875
 Fax: 936.294.3622
irb@shsu.edu
www.shsu.edu/~rgs_www/irb/

DATE: August 11, 2017

TO: Miriam Thomas [Faculty Sponsor: Lory Haas]

FROM: Sam Houston State University (SHSU) IRB

PROJECT TITLE: *Information Literacy Skills Proficiency and Academic Achievement of Select 12TH-Grade Students at a High-Minority High-Poverty School [T/D]*

PROTOCOL #: 2017-05-25323

SUBMISSION TYPE: INITIAL REVIEW—RESPONSE TO MODIFICATIONS

ACTION: APPROVED

APPROVAL DATE: August 9, 2017

EXPIRATION DATE: **August 9, 2018**

REVIEW TYPE: FULL BOARD

REVIEW CATEGORIES: §46.111 Criteria for IRB approval of research (Subpart A)
 §46.404 Research not involving greater than minimal risk (Subpart D)

Thank you for your submission of your **Response to Modifications** for this project. The Sam Houston State University (SHSU) IRB has **APPROVED** your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received **Full Board Review** based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this committee prior to initiation. Please use the appropriate revision forms for this procedure which are found on the Application Page to the SHSU IRB website.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Sam Houston State University IRB's records



Institutional Review Board
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All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All Department of Health and Human Services and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. **Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of August 9, 2018. When you have completed the project, a Final Report must be submitted to ORSP in order to close the project file.**

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact the IRB Office at 936-294-4875 or irb@shsu.edu. Please include your project title and protocol number in all correspondence with this committee.

Sincerely,

Donna Desforges
IRB Chair, PHSC
PHSC-IRB

APPENDIX B

Consent: Quantitative/Qualitative

**INFORMED CONSENT TO PARTICIPATE IN RESEARCH*****Information Literacy Skills Proficiency and Academic Achievement of Select 12th-Grade Students at a High-Minority High-Poverty School***

1. My name is Ms. Miriam Thomas and I am a doctoral student in the Department of Language, Literacy and Special Populations at Sam Houston State University. I am conducting a research study about information literacy skills proficiency for job market and college and career readiness of 12th-grade students. I would like to explain my study and ask you to participate.
2. I am asking you to take part in this research study because I would like to learn more about your information literacy skills and academic achievement.
3. If you agree to participate in this study, you will be asked to complete an online information literacy assessment designed for 12th-grade students, Tool for Real-time Assessment of Information Literacy (TRAILS), about your information literacy knowledge, and you will be asked to self-report your grade-point average (GPA).
4. There are no anticipated risks associated with this study. No identifying information is being collected from you as a participant. Information gathered will be confidential and no recognizable elements will be shared. Names will be kept confidential by using an electronically generated 4-digit code used in place of the participant's name.
5. As a participant in this study, you are helping me complete this research. I am only requesting that you respond to the online assessment questions to the best of your knowledge and to provide your current GPA. Your completed online assessment and GPA will only be made available to me, and when using in the information in the study, **your name will not be used to identify you.**
6. The following week after taking the TRAILS assessment, selected students will be asked to participate in the second-phase of the research. If you agree to join in this study and if you are selected for the second-phase, I would like to learn more about your perceptions of using information literacy skills, such as how they affect your academic achievement and how you believe these information literacy skills will help you in your Internet search of job markets and/or for college readiness.
7. If selected for the interview portion, I will contact you directly. You will be asked to participate in an audio recorded individual 30-minute interview per participant, consisting of 15 basic descriptive, open-ended questions. I am only asking that you respond to the individual interview questions openly and honestly. The interview will be conducted during the school day in a quiet room of the library or in an available



PARENT PERMISSION FOR MINOR TO PARTICIPATE IN RESEARCH

My name is Miriam Thomas, and I am a doctoral student in the Department of Language, Literacy and Special Populations at Sam Houston State University. I am conducting research under the direction of Dr. Lory Haas, an Assistant Professor from the College of Education at Sam Houston State University.

Why is my child being asked?

Your child is being asked to participate in a research study, *Information Literacy Skills Proficiency and Academic Achievement of Select 12th-Grade Students at a High-Minority High-Poverty School* because s/he is a student at MacArthur High School in Aldine ISD, and participated in an online information literacy skills assessment, Tool for Real-time Assessment of Information Literacy Skills (TRAILS), I recently administered to them. You are receiving this letter because your child has been selected to participate in the interview portion of this research study.

I would like to interview graduating 12th-grade students about their responses to the TRAILS online assessment. The assessment evaluated information literacy skills required for researching job markets and for college readiness. We ask that you read this form and ask any questions that you may have before you sign the form. Your child's participation in this research is voluntary. Your decision whether or not to allow your child to participate will involve no penalty or loss of benefits to which your child is otherwise entitled, and your child may discontinue participation at any time without penalty or loss of benefits to which s/he is otherwise entitled.

Why is this research being done?

Research indicates that entering college freshmen and job-seekers are not prepared to search, evaluate, analyze, and utilize credible information. However, there is little information revealing the information literacy skills of high school students who are preparing to enter the job market or enter college. This interview is being conducted as part of a dissertation study because, as an educator, I would like to seek perceptions from students about their information literacy skills and what they believe is important to know for job search and/or entering college.

What is the purpose of this research?

This purpose of this research is to find out how well children understand information literacy and the skills required to conduct research for employment and/or to conduct research for academic projects. It is also hoped that this research will help educators understand how important information literacy skills are in preparing graduating seniors for the work force or academic world.

What procedures are involved?

Information from the results of the following activities will be used for the research only if this consent form is returned. These events will take place during regularly scheduled school day facilitated by the researcher:

Assent: Quantitative/Qualitative



ASSENT TO PARTICIPATE IN RESEARCH

Information Literacy Skills Proficiency and Academic Achievement of Select 12th-Grade Students at a High-Minority High-Poverty School

1. My name is Ms. Miriam Thomas and I am a doctoral student in the Department of Language, Literacy and Special Populations at Sam Houston State University. I am conducting a research study about information literacy skills proficiency for job market and college and career readiness of 12th-grade students. I would like to explain my study and ask you to participate.
2. I am asking you to take part in this research study because I would like to learn more about your information literacy skills and academic achievement.
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4. There are no anticipated risks associated with this study. No identifying information is being collected from you as a participant. Information gathered will be confidential and no recognizable elements will be shared. Names will be kept confidential by using an electronically generated 4-digit code used in place of the participant's name.
5. As a participant in this study, you are helping me complete this research. I am only requesting that you respond to the online assessment questions to the best of your knowledge and to provide your current GPA. Your completed online assessment and GPA will only be made available to me, and when using in the information in the study, **your name will not be used to identify you.**
6. The following week after taking the TRAILS assessment, selected students will be asked to participate in the second-phase of the research. If you agree to join in this study and if you are selected for the second-phase, I would like to learn more about your perceptions of using information literacy skills, such as how they affect your academic achievement and how you believe these information literacy skills will help you in your Internet search of job markets and/or for college readiness.
7. If selected for the interview portion, I will contact you directly. You will be asked to participate in an audio recorded individual 30-minute interview per participant, consisting of 15 basic descriptive, open-ended questions. I am only asking that you respond to the individual interview questions openly and honestly. The interview will be conducted during the school day in a quiet room of the library or in an available unused room or

APPENDIX C

TRAILS Online Assessment

Twelfth Grade General Assessment 2

[BACK](#)

1. Trails Category: **Develop topic**
 21st Cent. Learner Std: **1.1.3**
 Common Core: **CC.11-12.WH/SS/S/TS7, CC.11-12.W.7**
 TRAILS Objective: **Given a list of open-ended questions, the learner will be able to identify the best research question.**

You have just been assigned to research an artist and the influence of art on society. You are assigned to write a seven-page paper and include at least five different sources. Of the topic questions below, which question would best address the assignment?

CHOOSE ONE ANSWER.

- ☐ What was the artist's most famous piece of art?
- ☒ How did the artist's work influence other artists and society?
- ☐ When and where did the artist live?
- ☐ With whom did the artist socialize?

2. Trails Category: **Develop topic**
 21st Cent. Learner Std: **1.1.3**
 Common Core: **CC.11-12.WH/SS/S/TS7, CC.11-12.W.7, CC.11-12.W.8**
 TRAILS Objective: **Given a list of possible sources to use in focusing a topic for a research project, the learner will choose the best resource.**

You are a member of the school speech and debate team. You will be debating stem cell research and want to have the most accurate and convincing information. In order to narrow your search to the most accurate information from a scientific viewpoint what resource would you use?

CHOOSE ONE ANSWER.

- ☒ Articles about stem cell research from science journals
- ☐ Medical encyclopedia
- ☐ A book about the bioethics of stem cell research
- ☐ A recent article in a news magazine about stem cell research

3. Trails Category: **Develop topic**

21st Cent. Learner Std: **1.1.3**

Common Core: **CC.11-12.WH/SS/S/TS7,
CC.11-12.W.7,
CC.11-12.W.8**

TRAILS Objective: **Given a list of topics, the learner will identify the topic that is the broadest.**

You are writing a paper about computer safety and have had some difficulty finding information. You want to broaden your search to see if you can find more information. Choose which of the following would best broaden the search.

CHOOSE ONE ANSWER.

- ☐ Operating system updates
- ☐ Firewall protection
- ☐ Antivirus software
- ☒ **Computer protection**

4. Trails Category: **Develop topic**

21st Cent. Learner Std: **1.1.3**

Common Core: **CC.11-12.WH/SS/S/TS7,
CC.11-12.W.7,
CC.11-12.W.8**

TRAILS Objective: **Given a topic for a research paper, the learner will identify whether it is manageable, too narrow, or too broad.**

Consider the topic below as a possible topic for your four-page research paper about World War II. Is the topic too broad, too narrow, or a good topic for the paper?

"The treatment of Jews by the Nazis during World War II was a form of human rights abuse."

CHOOSE ONE ANSWER.

- ☐ Good topic
- ☐ Topic too narrow
- ☒ **Topic too broad**

5. Trails Category: **Develop topic**

21st Cent. Learner Std: **1.1.3**

Common Core: **CC.11-12.WH/SS/S/TS7,
CC.11-12.W.7,
CC.11-12.W.8**

TRAILS Objective: **Given a list of open-ended questions, the learner will be able to identify the best research question.**

In your social studies class you are assigned a three-page paper requiring a topic relating to important events in United States history. Which of the following research questions would represent the best topic for a three-page paper?

CHOOSE ONE ANSWER.

- ☐ What reasons did each of the signers of the Declaration of Independence have for signing the document?
- ☐ Why did the United States decide to purchase the Louisiana Territory?
- ☒ What are three reasons why the United States entered into World War II?
- ☐ What were the political, social and economic impacts of the Civil War?

6. Trails Category: **Develop topic**

21st Cent. Learner Std: **1.1.3**

Common Core: **CC.11-12.WH/SS/S/TS7,
CC.11-12.W.7,
CC.11-12.W.8**

TRAILS Objective: **Given a list of topics, the learner will identify the topic that is too narrow to address an information need.**

You are doing a paper on tattoos. Which of the following questions is too narrow a topic for a five-page paper?

CHOOSE ONE ANSWER.

- ☐ What are the possible medical issues with tattoos?
- ☒ How can tattoos be removed?
- ☐ Is society accepting of tattoos?

7. Trails Category: **Identify potential sources**

21st Cent. Learner Std: **1.1.4**

Common Core: **CC.11-12.W.8**

TRAILS Objective: **Given a description of sources, the learner will identify the secondary source.**

You are doing a research paper on Apollo 12 astronaut Neil Armstrong. Which of the following is a secondary source?

CHOOSE ONE ANSWER.

- ☐ Letter qualifying him as a Naval Aviator
- ☐ Neil Armstrong's college transcript
- ☐ Neil Armstrong's flight log
- ☒ Neil Armstrong's biography

8. Trails Category: **Identify potential sources**
 21st Cent. Learner Std: **1.1.4**
 Common Core: **CC.11-12.WH/SS/S/TS7, S-IC.3, CC.11-12.L.4.c, CC.11-12.R.I.7, CC.11-12.W.7, CC.11-12.W.8, CC.11-12.RS/TS1**
 TRAILS Objective: **Given a list of possible sources, the learner will select the combination of sources that will best meet the information need.**

You have been asked to research and give a presentation on the future of 3D printing. Which group of multiple sources would provide the most productive search?

CHOOSE ONE ANSWER.

- ☐ A science & technology database, a local newspaper, an encyclopedia
- ☐ An interview with an engineer, an encyclopedia, a local newspaper
- ☒ A newspaper database, a science & technology database, interview with an engineer
- ☐ An encyclopedia, a newspaper database, a science & technology database

9. Trails Category: **Identify potential sources**
 21st Cent. Learner Std: **1.1.4**
 Common Core: **CC.11-12.W.8**
 TRAILS Objective: **Given a list of sources, the learner will select the most appropriate source to meet the information need.**

You must create and maintain a website about the use of drones for an assignment. There will be a prize for the best website. Before you get started, you want to see other examples of popular websites. How would you best locate some examples?

CHOOSE ONE ANSWER.

- ☒ Use an Internet website rating service such as Alexa.
- ☐ Locate a book about websites in the library's online catalog.
- ☐ Do a keyword search on drones in a search engine, such as Google.
- ☐ Complete a survey of staff and students to see which websites they review.

- 10** Trails Category: **Identify potential sources**
 • 21st Cent. Learner Std: **1.1.4**
 Common Core: **CC.11-12.W.8**
 TRAILS Objective: **Given a list of possible sources, the learner will select the combination of sources that will best meet the information need.**

Your assignment is to take a stand on a current event and support your stand with evidence. You have chosen to argue that schools should allow students to have cell phones in the classroom as a tool for student learning. Which of the following set of sources would likely provide support for your position?

CHOOSE ONE ANSWER.

- ☐ Interviews with teachers, books on classroom learning, encyclopedia of education history
- ☐ An education research database, interviews with teachers, local newspaper
- ☐ An encyclopedia of education history, local newspaper, scholarly journals
- ☒ A national education website, education research database, magazine articles

- 11** Trails Category: **Identify potential sources**
 • 21st Cent. Learner Std: **1.1.8**
 Common Core: **CC.11-12.WH/SS/S/TS7, CC.11-12.W.7, CC.11-12.W.8**
 TRAILS Objective: **Given a research topic and types of sources, the learner identifies the information source most likely to contain the needed information.**

You are doing a research paper on the social influences of hip hop. Which of the following resources is **most** likely to be useful for your project?

CHOOSE ONE ANSWER.

- ☐ History book on American music
- ☐ Encyclopedia article on Hip Hop
- ☐ Magazine database of popular magazine articles
- ☒ Social science database of academic journal articles

- 12** Trails Category: **Identify potential sources**
 21st Cent. Learner Std: **1.1.4**
 Common Core: **CC.3.W.8**
 TRAILS Objective: **Given a list of online sources, the learner will demonstrate an understanding of the research process by selecting best order for using the sources in researching a topic.**

Which list of potential electronic sources of information shows the best order for researching most topics?

CHOOSE ONE ANSWER.

- ☐ A search engine (such as Google), authoritative website, electronic encyclopedia, social network.
- ☐ Social network, nonfiction e-book, a search engine (such as Google), article database
- ☐ Nonfiction e-book, a search engine (such as Google), authoritative website, article database
- ☒ Electronic encyclopedia, article database, authoritative website, search engine (such as Google)

- 13** Trails Category: **Develop, use, and revise search strategies**
 21st Cent. Learner Std: **1.1.8**
 Common Core: **CC.11-12.WH/SS/S/TS7, CC.11-12.W.7, CC.11-12.W.8**
 TRAILS Objective: **Given a type of source, the learner will identify the most efficient way to obtain needed information from it.**

You have found a book that looks like a great source to use for your paper. It has fifteen chapters and more than 350 pages. What is the best way to find the information that you need?

CHOOSE ONE ANSWER.

- ☒ Use the index
- ☐ Skim the book

- ☐ Check the book jacket for a summary
- ☐ Read through the table of contents

- 14** Trails Category: **Develop, use, and revise search strategies**
 21st Cent. Learner Std: **1.1.8**
 Common Core: **CC11-12WH/SS/S/TS7, CC11-12WH/SS/S/TS8**
 TRAILS Objective: **Given a research topic, the learner will identify the best set of keywords and logical (Boolean) operators to use to find information on the topic.**

Your assignment is to create a newspaper page depicting the fall of the Berlin Wall. Which search terms are most appropriate for an online search for newspaper examples of the event?

CHOOSE ONE ANSWER.

- ☐ Fall **OR** Berlin Wall **OR** Communism
- ☐ Fall **AND** Berlin Wall **AND** Newspaper
- ☐ Germany **AND** Berlin **AND** Wall
- ☐ Berlin Wall **AND** decline **NOT** beginning

- 15** Trails Category: **Develop, use, and revise search strategies**
 21st Cent. Learner Std: **1.1.8**
 Common Core: **CC11-12WH/SS/S/TS7, CC11-12WH/SS/S/TS8**
 TRAILS Objective: **Given a search task, the learner identifies the most efficient way to record the information retrieved.**

You are researching various colleges in order to decide which university best meets your needs. The fields you have decided to include are tuition, room and board, number of applicants, the percentage admitted, and the average SAT/ACT test scores. The best way to record this information would be:

CHOOSE ONE ANSWER.

- ☐ Note cards
- ☐ Spreadsheet
- ☐ Word processing document
- ☐ Table/Chart

- 16** Trails Category: **Develop, use, and revise search strategies**
 • 21st Cent. Learner Std: **2.1.1**
 Common Core: **CC.11-12.W.7, CC.11-12.W.8**
 TRAILS Objective: **Given an information need, the learner will select the correct order of the steps in the information-seeking process.**

In Science class your group is creating a pamphlet encouraging the community to support creating a nature park. This pamphlet will be distributed in your school and community. Select the correct order of steps your group needs to take.

1. Search sources, evaluate, and record information.
2. Organize information and create a rough draft of your pamphlet.
3. Identify information needed and likely sources.
4. Get review comments and revise for final version.
5. Review the success of your research and final pamphlet.
6. Focus the topic for the intended audience.

CHOOSE ONE ANSWER.

- ☐ 6, 2, 1, 3, 5, 4
☐ 3, 6, 1, 2, 5, 4
☒ 6, 3, 1, 2, 4, 5
☐ 3, 6, 2, 1, 4, 5
☐ 6, 3, 2, 1, 4, 5

- 17** Trails Category: **Develop, use, and revise search strategies**
 • 21st Cent. Learner Std: **1.2.5**
 Common Core: **CC.11-12.W.7**
 TRAILS Objective: **Given a list of choices and a finding tool, the learner will identify an appropriate search strategy for the tool.**

You enter a search in a library database. The search returns only 10 results. You are sure there are more publications with information about the topic in the database you are searching. Which of the following search tools do you use to find more information about the topic?

CHOOSE ONE ANSWER.

- ☐ Subject - choose a specific subject search
☒ Results expander - search full text

- ☐ Publication - *select specific magazine*
- ☐ Results limiter - *magazines or newspapers*

- 18** Trails Category: **Develop, use, and revise search strategies**
- 21st Cent. Learner Std: **1.2.5**
 - Common Core: **CC.11-12.W.7**
 - TRAILS Objective: **Given a search, the learner will select the most effective filter to complete the search.**

You are searching in a database for scholarly articles. What search filter could you use to help find the relevant information quickly?

CHOOSE ONE ANSWER.

- ☐ Primary source
- ☒ Peer-reviewed
- ☐ Or
- ☐ Near

- 19** Trails Category: **Evaluate sources and information**
- 21st Cent. Learner Std: **1.3.2**
 - Common Core: **CC.11-12.R.I.7,
CC.11-12.W.7,
CC.11-12.W.8**
 - TRAILS Objective: **Given a list of sources, the learner will select the one with the most authority to meet the information need.**

Your grandfather is touting the benefits of taking colloidal silver, an alternative medicine, for his overall health. You do a Google search to learn more. Which of the following results would be the best source for authoritative information?

CHOOSE ONE ANSWER.

- ☐ wikipedia.org- (Medical uses of silver)
- ☐ webMD.com - (Colloidal silver)
- ☒ nccih.nih.gov -(Colloidal silver: What you need to know)
- ☐ www.silver-colloids.com- (colloidal silver facts)

- 20** Trails Category: **Evaluate sources and information**
 • 21st Cent. Learner Std: **1.1.5**
 Common Core: **CC.11-12.WH/SS/S/TS8, CC.11-12.R.I.7, CC.11-12.RS/TS6, CC.11-12.RS/TS8**
 TRAILS Objective: **Given a list of sources, the learner will identify the best site for current and accurate information.**

You have seen an offer in a magazine for free dietary supplements. Which of the sources listed below would give the most accurate and current information about the supplements being offered?

CHOOSE ONE ANSWER.

- ☐ Website of dietary supplement manufacturer
- ☐ A blog site on body building
- ☐ A magazine article database
- ☒ Government website on dietary supplements

- 21** Trails Category: **Evaluate sources and information**
 • 21st Cent. Learner Std: **1.1.3**
 Common Core: **CC.11-12.WH/SS/S/TS7, CC.11-12.W.7, CC.11-12.W.8**
 TRAILS Objective: **Given a source, the learner will identify if it is biased or unbiased.**

You are doing a paper on electronic cigarettes. Based on the information given, what is the likelihood of bias in this article?

"E-cigarettes, vaping, hookahs and patients." *Tennessee Medicine: Journal Of The Tennessee Medical Associations*

CHOOSE ONE ANSWER.

- ☒ Article is most likely unbiased.
- ☐ Article is most likely biased.

- 22** Trails Category: **Evaluate sources and information**
 • 21st Cent. Learner Std: **1.1.5**

Common Core: **CC.9-10.SL.3,
CC.9-10.W.8**

TRAILS Objective: **Given a research question and a list of facts, the learner will identify the fact that supports the research question.**

The research question for your paper is the extent to which ethanol is energy efficient. "Does ethanol yield more energy than the energy needed for its production?"

Which of the following facts addresses your research question?

CHOOSE ONE ANSWER.

- ☐ 47% of the Iowa corn crop goes into ethanol production.
- ☐ Ethanol contains 34% more energy than is used to grow the corn and distill it into ethanol.
- ☐ Government subsidies lower the price of ethanol.
- ☐ Over 95% of all fuel sold in the U.S. is blended with 10% ethanol.

23 Trails Category: **Evaluate sources and information**

• 21st Cent. Learner Std: **1.1.4**

Common Core: **CC.9-10.WH/SS/S/T.8,
CC.9-10.W.8**

TRAILS Objective: **Given a list of sources, the learner will identify the source that is biased.**

You are researching the pros and cons of deforestation. Which resource is most likely to include biased information about your topic?

CHOOSE ONE ANSWER.

- ☐ The article titled "NASA Tropical Deforestation Research" published by the National Aeronautics and Space Administration, a government research agency
- ☐ The article "Global Deforestation" published by scientists at the University of Michigan, a public research university
- ☐ The article "Solutions to Deforestation" published by Greenpeace, an independent campaigning organization focused on the environment
- ☐ The article "Deforestation Increasing in the Amazon" published by the New York Times, an international news company

24 Trails Category: **Evaluate sources and information**

• 21st Cent. Learner Std: **1.1.5**

Common Core: **CC.9-10.SL.3,
CC.9-10.W.8**

TRAILS Objective: **Given information on a website, the learner will identify the best way to determine the accuracy of the information.**

A team of scientists claim they have discovered a human ancestor that lived 3.3 to 3.5 million years ago in Ethiopia. Someone updated the Wikipedia page about Australopithecus (extinct genus of hominids). What organization would be most likely to write the most accurate account of this claim?

CHOOSE ONE ANSWER.

- ☒ A member of the discovery team
- ☐ The National Science Foundation
- ☐ A national news service like the Associated Press
- ☐ The Ethiopian government news service

25 Trails Category: **Use information responsibly, ethically, and legally**

• 21st Cent. Learner Std: **1.3.1**

Common Core: **CC.11-12.SH/SS/S/TS8,
CC.11-12.W.8**

TRAILS Objective: **Given a list of choices, the learner will identify the application of fair use.**

Which of the following is an example of using copyrighted material under the “fair use” guidelines?

CHOOSE ONE ANSWER.

- ☐ You digitize a photo from a print magazine to use for your t-shirt business.
- ☐ You copy five photos from an online website and add to your web page with a photo credit.
- ☐ You copy photos from an art book and print them to sell to other students.
- ☒ You copy five photos from an online website to use for your in-class presentation.

26 Trails Category: **Use information responsibly, ethically, and legally**

• 21st Cent. Learner Std: **1.3.1**

Common Core: **CC.11-12.SH/SS/S/TS8,
CC.11-12.W.8**

TRAILS Objective: **Given a list of choices, the learner will demonstrate how to determine something is “common knowledge” and does not require a citation.**

You understand that if something is “common knowledge” that it generally does not need to be cited. Which of the following is how you decide?

CHOOSE ONE ANSWER.

- ☐ General information that you expect the readers will know
- ☐ Five other credible sources do not cite the information
- ☒ **All of these**
- ☐ Information easily found in basic reference sources

27 Trails Category: **Use information responsibly, ethically, and legally**

• 21st Cent. Learner Std: **1.3.1**

Common Core: **CC.11-12.W.8,
CC11-12WH/SS/S/TS8**

TRAILS Objective: **Given a list of choices, the learner will identify the application of fair use.**

You are preparing a presentation that will be posted on a publicly available website. You have found images on the web from the U.S. National Archives that you want to use. They are noted as being in the “public domain.” What do you need to do to use these images?

CHOOSE ONE ANSWER.

- ☒ **Place the images on the website with a credit to the original source.**
- ☐ Seek written permission from the National Archives to use the images.
- ☐ Place the images on the website with a note that permission is being sought.
- ☐ Look for other images to use instead.

28 Trails Category: **Use information responsibly, ethically, and legally**

• 21st Cent. Learner Std: **1.3.3**

Common Core: **CC.11-12.W.8**

TRAILS Objective: **Given a list of choices, the learner will identify proper paraphrasing to avoid plagiarism.**

Which of the following is considered an example of correct paraphrasing to avoid plagiarism?

CHOOSE ONE ANSWER.

- ☐ Using author's sentences, quotation marks, giving credit
- ☐ Using author's sentences, no quotation marks, giving credit
- ☐ Changing a few words, no quotation marks, giving credit
- ☒ Changing the words and sentence structure, no quotation marks, giving credit

29 Trails Category: **Use information responsibly, ethically, and legally**

21st Cent. Learner Std: **1.3.3**

Common Core: **CC.11-12.W.8**

TRAILS Objective: **Given choices, the student will choose the example that is correctly paraphrased without plagiarizing.**

"The Art Nouveau movement was committed to abolishing the traditional hierarchy of the arts, which viewed so-called liberal arts, such as painting and sculpture, as superior to craft-based decorative arts."

A student wants to use the information from the sentence above in a research paper for their Art History class. The teacher has asked that students properly paraphrase without plagiarizing. Which of the examples below is correctly paraphrased and not plagiarized?

CHOOSE ONE ANSWER.

- ☒ A key aspect of the Art Nouveau style was the attempt to change attitudes about high and low art, raising the status of the decorative arts to equal level with the likes of sculpture and painting.
- ☐ The Art Nouveau movement wanted to change the traditional hierarchy of the arts, which considered painting and sculpture as superior to the decorative arts.
- ☐ Abolishing the traditional hierarchy of the arts, which viewed the liberal arts, like painting and sculpture, as superior to craft-based decorative arts, was a key commitment of the Art Nouveau Movement.
- ☐ The Art Nouveau style was committed to undermining the liberal arts, such as painting and sculpture, in order to favor the decorative arts.

30 Trails Category: **Use information responsibly, ethically, and legally**

21st Cent. Learner Std: **1.3.1**

Common Core: **CC11-12SH/SS/S/TS8,
CC.11-12.W.8**

TRAILS Objective: **Given choices about using video in a presentation, the student will choose the answer that reflects what is permitted according to copyright law.**

You have come across a great 10 minute video online about the Montgomery Bus Boycott that you would like to include in a presentation you are doing about the Civil Rights Movement. According to copyright law, how much of the video are you permitted to use?

CHOOSE ONE ANSWER.

- ☐ You may use up to 33% or 5 minutes, whichever is more, in your multimedia presentation.
- ☒ You may use up to 10% or 3 minutes; whichever is less, as part of a multimedia presentation.
- ☐ You may use the entire original video in your multimedia presentation since it is part of the course curriculum.

- 31** Trails Category: **Develop topic**
- 21st Cent. Learner Std: **1.1.3**
 - Common Core: **CC.3.R.I.1**
 - TRAILS Objective: **Given three related questions and a list of three topics, students will select the topic that includes all the questions.**

You need to answer the following questions:

1. What is a valley?
2. How are mountains formed?
3. What is a plateau?

What topic should you choose for your report that will include all of these questions?

CHOOSE ONE ANSWER.

- ☐ New England
- ☒ Landforms
- ☐ Weather
- ☐ Mountains

- 32** Trails Category: **Develop topic**
- 21st Cent. Learner Std: **1.1.3**
 - Common Core: **CC.3.R.I.1**
 - TRAILS Objective: **Given a series of questions about a topic, students will correctly identify the question that does not address the topic.**

You are learning that all countries have some form of government. Which question below is **not** about the topic of government?

CHOOSE ONE ANSWER.

- ☐ What is a democracy?
- ☐ Why do we have elections?
- ☐ How old must I be to vote?
- ☐ **Where is Washington D.C.?**

33 Trails Category: Develop topic

• 21st Cent. Learner Std: **1.1.3,1.1.1**

Common Core: **CC.3.R.1.1,
CC.3.W.7**

TRAILS Objective: **Given a list of four research topics, the student will correctly identify the topic that reflects his personal interest.**

You need to write a report on your favorite hero. How would you choose your subject?

CHOOSE ONE ANSWER.

- ☐ Ask your best friend.
- ☐ Use your teacher's example.
- ☐ Look in a book.
- ☐ **Write about a person you admire.**

34 Trails Category: Identify potential sources

• 21st Cent. Learner Std: **1.1.4**

Common Core: **CC.6-8.WH/SS/S/TS8,
CC.6.W.8**

TRAILS Objective: **Given four options for locating fiction books in the library, students will be able to locate a fiction book by the author's last name.**

A friend tells you that he is reading a good fiction book. The book is *Henry and Ribsy* by Beverly Cleary. You go to the library to find a copy of the book. Where would the book be located?

CHOOSE ONE ANSWER.

- ☐ On the "H" shelf for Henry
- ☐ On the "R" shelf for Ribsy
- ☐ On the "B" shelf for Beverly

☐ On the "C" shelf for Cleary

35 Trails Category: **Identify potential sources**

• 21st Cent. Learner Std: **1.1.4**

Common Core: **CC.3.W.8,
CC.3.R.I.7**

TRAILS Objective: **Given four information source formats and a topic, students will be able to identify the information source format that is not relevant to the topic.**

The city where you live is building a new park. You want to know if the new city park will have an area for skateboarding. Which one of these sources would be **least likely** to have information about the new city park?

CHOOSE ONE ANSWER.

- ☐ A local newspaper article
- ☐ A map at city hall
- ☒ A skateboarding magazine
- ☐ A drawing of the park

36 Trails Category: **Identify potential sources**

• 21st Cent. Learner Std: **1.1.4**

Common Core: **CC.3.W.8,
CC.3.R.I.7**

TRAILS Objective: **Given a research question and a set of four resources, the learner will correctly identify the resource needed to answer the research question.**

What book would you use if you did not know how to spell the plural of box?

CHOOSE ONE ANSWER.

- ☒ A dictionary
- ☐ An encyclopedia
- ☐ An atlas
- ☐ A thesaurus

37 Trails Category: **Develop, use, and revise search strategies**

21st Cent. Learner Std: **1.1.8**

Common Core: **CC.3.W.6**

TRAILS Objective: **Given a record of an item from an online catalog and a list of three sections of the library, the learner will be able to correctly identify in which section of the library the item is located.**

Look at the picture below. If you wanted to check out this book, where would you find it in the library?

The screenshot shows a library catalog interface for 'CAT JR.' with a 'Full Record Display' header. Navigation links include 'Go Back to List', 'Previous Record', 'Next Record', and 'New Search'. The record details for 'Record # 1' are as follows:

Title : The magician's elephant / Kate DiCamillo ; illustrated by Yoko Tanaka.
Author : [DiCamillo, Kate.](#)
Holdings :

Library	Call Number	Status
Holden Elementary - Fiction Collection	FIC DIC	Available

Publisher : Somerville, Mass. : Candlewick Press, 2009.
Edition : 1st ed.
ISBN : 0763644102
Description : 201 p. : ill. ; 21 cm.
Subject(s) : [Orphans Fiction.](#)
[Missing children Fiction.](#)
[Elephants Fiction.](#)
[Siblings Fiction.](#)
[Adventure fiction.](#)
[Adventure fiction.](#)

On the right, there is a book cover for 'The Magician's Elephant' by Kate DiCamillo and a link to 'Read an excerpt'.

CHOOSE ONE ANSWER.

- ☐ The nonfiction section
- ☐ **The fiction section**
- ☐ The reference section

38 Trails Category: **Develop, use, and revise search strategies**
 21st Cent. Learner Std: **1.1.8**

Common Core: **CC.3.W.6**
 TRAILS Objective: **Given a list of four choices, the student will be able to correctly identify the correct way to search for a book using the online catalog.**

In most libraries when searching for a book you would use the online catalog to find the book you want. Which of the following are used when searching for a book?

CHOOSE ONE ANSWER.

- ☒ Title, Author or Subject
- ☐ Title, Copyright Date or Publisher
- ☐ Title Page, Author, or Subject
- ☐ Title, Publisher, Place of Publication

39 Trails Category: **Develop, use, and revise search strategies**

• 21st Cent. Learner Std: **1.1.8**

Common Core: **CC.3.W.6**

TRAILS Objective: **Given a research need, the learner will identify potential sources of information.**

You are doing a project on light and sound. When you search the library's online catalog, what search would be the best to help you find out more about light and sound?





CHOOSE ONE ANSWER.

- ☒ Subject search
- ☐ Author search
- ☐ Title search

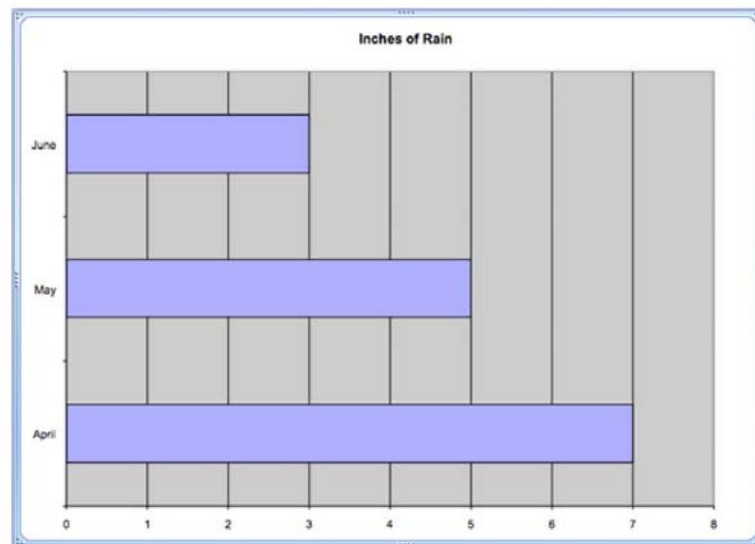
40 Trails Category: **Evaluate sources and information**

• 21st Cent. Learner Std: **1.1.4**

Common Core: **CC.3.R.I.7**

TRAILS Objective: **Given simple definitions of  information  and  data  and one example, students will correctly identify the example as either information or data.**

Information is facts in sentences. **Data** are numbers in lists, charts or graphs. You have to find out how much rain your town gets in the spring. Here is a graph you found:



Is this graph information or data?

CHOOSE ONE ANSWER.

- ☐ Information
- ☒ Data

- 41** Trails Category: **Identify potential sources**
- 21st Cent. Learner Std: **1.1.4**
 - Common Core: **CC.3.W.8**
 - TRAILS Objective: **Given a list of sources, the learner will identify the primary source.**

Which of the items below is a **primary source**?

CHOOSE ONE ANSWER.

- ☐ Biography
- ☐ Encyclopedia
- ☒ Letter
- ☐ Magazine

- 42** Trails Category: **Evaluate sources and information**
 21st Cent. Learner Std: **2.1.2**
 Common Core: **CC.3.W.8**
 TRAILS Objective: **Given a topic outline of three parts and a fact about the topic, the student will correctly identify the part of the outline in which the fact belongs.**

You need to do a report on deserts. Your teacher has given you this outline:

- A. What is a desert?
- B. What animals live in a desert?
- C. Where is there a desert in the United States?

One fact you found: Deserts are dry and get very little rain.

In which part of your outline does this fact belong?

CHOOSE ONE ANSWER.

- ☒ A
- ☐ B
- ☐ C

- 43** Trails Category: **Use information responsibly, ethically, and legally**
 21st Cent. Learner Std: **1.3.1, 2.1.4**
 Common Core: **CC.3.W.8**
 TRAILS Objective: **Given a title page from a source, the student will correctly identify the publisher.**

Look at the title page below. What is the name of the publisher?

Owl Moon

By Jane Yolen
Illustrated by John Schoenherr

Philomel Books
New York

CHOOSE ONE ANSWER.

☐ Owl Moon
☐ Jane Yolen
☒ Philomel Books
☐ John Schoenherr

- 44** Trails Category: **Use information responsibly, ethically, and legally**
- 21st Cent. Learner Std: **2.1.2, 2.1.3**
- Common Core: **CC.3.W.8**
- TRAILS Objective: **Given a list of three choices, the student will correctly identify procedures for taking notes.**

You are using a nonfiction book about robots to write a report. The librarian tells you to take notes. What should you do?

CHOOSE ONE ANSWER.

- ☐ You can copy the words exactly as the author wrote them and use them as your own.
☒ You read the author's words and then re-write the facts in your own words.
☐ You make a copy of the pages of the book and use that as your report.

- 45 Trails Category: **Use information responsibly, ethically, and legally**
• 21st Cent. Learner Std: **1.3.1, 2.1.2**
Common Core: **CC.3.W.8**
TRAILS Objective: **Given a list of three choices, the student will correctly identify the items needed to create a bibliography.**
- You write a report using books. To show what books you used, you make a bibliography. Which of the following items must you include for each book?
- CHOOSE ONE ANSWER.**
- ☐ Author, title, date due at library.
 - ☐ Author, title, number of pages.
 - ☐ Author, title, copyright date.

Twelfth Grade General Assessment 2

APPENDIX D

Qualitative Phase - Interview Questions

1. When you think about the term Information Literacy, how would you describe it?
2. When did you start learning and understanding the research process?
3. When completing research projects, what steps do you take to find information? Where do you look? Who do you ask for assistance?
4. How do you use your research sources within your paper or project? What process do you use for rewriting or paraphrasing your sources?
5. What have you learned in your last 3 years of high school about researching information for your research projects?
6. How has your knowledge of research and using sources affected your grades?
7. How have you used your knowledge of the research process to search for jobs after graduation or for information about your future career?
8. What information literacy skills do you believe you need to know to research jobs and subsequently as an employee in the workforce?
9. In what ways have you improved at finding online information for research projects? How has your academic progress been affected by those improvements?
10. What do you find is the most difficult part of the research process?
11. Describe your process for citing sources in your research projects?
12. Now that you are in your last year of high school, what information literacy knowledge has benefitted you the most to prepare you for researching the job market or for college and career research?

13. Thinking about your cultural and social surroundings, describe how your family and friends have helped you in your academic achievement? How did they influence you to succeed academically?
14. What information literacy skills do you believe you need to know for college level work and preparing for a career after college?
15. In what ways has your culture affected your desire to succeed academically?

APPENDIX E

2/3/2018

Re: Seeking permission to adapt table - Thomas, Miriam

Re: Seeking permission to adapt table

Sirje Virkus <sirjevirkus@hotmail.com>

Sat 2/3/2018 8:42 AM

To: Thomas, Miriam <mxt021@SHSU.EDU>;

OK, you have my permission.

Best regards,
Sirje

Sirje Virkus, professor
 Head of the Study Area of Information Sciences,
 School of Digital Technologies,
 Tallinn University
 Narva Road 25
 10120 Tallinn
 ESTONIA
 Ph: +372 6199 582
 Fax: +372 6409 481
 e-mail: sirvir@thu.ee

From: Thomas, Miriam <mxt021@SHSU.EDU>
Sent: 03 February 2018 4:37 PM
To: Sirje Virkus
Subject: Re: Seeking permission to adapt table

Thank you so much. The note has already been added, but the university librarian also wanted to make sure I had the permission granted as well.

Thank you so much for your quick response.

Miriam Thomas

From: Sirje Virkus <sirjevirkus@hotmail.com>
Sent: Saturday, February 3, 2018 8:33:06 AM
To: Thomas, Miriam
Subject: Re: Seeking permission to adapt table

Dear Miriam,

You have to add the note to your table "adapted from the table 1 from Virkus, 2011, pp.17-18" and add the reference to your References.

Best regards,
Sirje

VITA

Miriam Thomas

Education

Ed.D – Literacy, Sam Houston State University (in progress)
 Principal Certification – Lamar University, Beaumont, TX
 M.L.S. –Library Science, Sam Houston State University, Huntsville, TX
 B.S. – Mass Communications, Virginia Commonwealth University, Richmond, VA

Certifications

Principal Certificate – EC-12, Texas
 Librarian Certificate – EC-12, Texas
 Standard Teacher Certificate – 4-8 Generalist, Texas
 ESL Supplemental – EC-12 Endorsement, Texas
 Special Education – EC-12 Endorsement, Texas
 Online Instructor Certificate – Harris County Department of Education

Educational Leadership Experience

Aldine Leadership Academy – Member 2016-2017
 Schoology – train the trainer
 Co-Chair Career Development Center – Texas Library Association Conference 2016
 Information Literacy Specialist curriculum writing team member
 District teacher instructor of database utilization and research
 Campus Improvement Plan Committee member
 Parental Involvement Committee facilitator
 Key Communicator for campus news and activities
 School Grant Coordinator
 Benefits Advisory Committee representative

Educator Experience

Information Literacy Specialist – MacArthur Senior High & Aldine Ninth Grade Schools

- Responsible for annual library media and supply budgets and purchasing
- Instruct research skills and database use to students
- Assist students in book selection for leisure and educational reading
- Support teachers by providing curriculum materials both print and digital

English and Humanities Teacher—Wilson Intermediate School

- Integrated various instructional and intervention strategies for student motivation
- Assessed students daily, weekly, and monthly to determine differentiated needs
- Developed discipline management plan to manage classroom behavior

Math co-teacher – Wilson Intermediate School, Houston, TX 2008-2012

- Utilized Reasoning Mind computer-based math program for various sub-groups
- Assessed students daily, weekly, and monthly to determine differentiated needs
- Developed discipline management plan to manage classroom behavior

Grants

- CPA Society of Houston Educator Grant - \$1500.00 for books targeted towards struggling readers
- Dollar General Literacy Grant of \$2,500.00 for Stepping Up to Literacy Reading Intervention Project
- Donors Choose recipient for Relax and Read project for library café table and chairs
- Donors Choose recipient for Kindle-ing for Reading – Kindles, adapters, and covers for small group reading

Conferences and Presentations

Texas Library Association Houston Conference 2016 - Co-Chair Career Development Center

Technology Curriculum Conference of Aldine - QRacking the Code: using QR codes in education

Professional Affiliations

Texas Library Association

American Library Association

American Association of School Librarians

Texas Association for Literacy Education

Association of Literacy Educators and Researchers

Social and Community Service Organization

Sigma Gamma Rho Sorority, Incorporated

Texas Multicultural Women Organization