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Teacher and Student Perceptions of Digital Skills: A Qualitative Case Study

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Dissertation submitted to the Faculty of the College of Education in partial fulfillment of the requirements for the degree of Doctor of Education in Teacher Leadership

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Abstract

The idea that today's learners possess uniquely advanced digital skills continues to persist in the field of education, yet a significant void may exist between the formal digital literacy skills today's students possess and the essential skills they need to be digitally competent, lifelong learners. The purpose of this research study was to explore teachers' and students' perceptions of students' digital literacy for learning. These two research questions guided the study: 1) How do teachers perceive their students' digital literacy skills as effective for learning? and 2) How do students perceive their digital literacy skills as effective for learning? Calvani, Fini, and Ranieri's (2009) Digital Competence Framework served as the theoretical foundation for the study. Fourteen individuals, seven middle school teachers and seven middle school students, participated in the study. The data sources consisted of questionnaires, individual interviews, and focus groups. Data sources were coded and utilized to determine both teachers' and students' perceptions of digital literacy for learning. Results of the study indicated that teachers perceived students' digital literacy skills both positively and negatively. Conversely, students' perceptions of their digital literacy skills were generally positive. The findings of this study indicated that the students perceived their digital literacy skills much more confidently than teachers perceived those skills. Also, the researcher identified specific negative perceptions of students' digital literacy skills for learning and provided recommendations for advancing students' digital competence in the classroom and beyond.

Keywords: digital native, digital literacy, digital competence, digital competence framework, student perceptions, teacher perceptions, technological literacy, cognitive literacy, ethical literacy, 21st century skills

Dedication

To God be the glory.

"I can do all things through Christ who strengthens me."

Philippians 4:13

To my husband, Steve,

my children Benjamin, Blaine and Caitlyn, and Luke,

and my grandson, Jonathan.

And to my parents to whom I owe my life.

I hope I've made you proud.

I love you to infinity and beyond.

∞

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Chapter 1: Introduction

Introduction

This qualitative study explored perceptions of teachers and middle school students' digital literacy skills. Today's students carry more technology in their cell phones than the technology that successfully landed the first astronaut on the moon. For all these advances, students are ill-equipped to use the power that digital tools can provide for knowledge and learning (Kirschner & De Bruyckere, 2017). Instead, they spend the majority of their waking hours digitally communicating with peers, engrossed in videos and digital games, and downloading the newest social apps to stay connected to their friends. When students are only comfortable with a narrow range of technology tools, they may be demonstrating few valuable skills in utilizing technology for collaboration and creating real-world knowledge. More specifically, they may not be equally academically skilled with technology essential for learning. These superficial digital skills are not sufficient to define one as being digitally literate (Gurung & Rutledge, 2014; Kennedy & Fox, 2013). The idea that these young people are *digital natives* (Prensky, 2001a), possessing uniquely advanced digital skills, continues to prevail in the field of education. This belief that today's students are digitally advanced because they were merely born into a digital world could limit their progress in becoming digitally competent and literate.

This digital native belief has been challenged by research asserting that today's students most often utilize digital tools specifically for their own personal use, such as entertainment and communication (Gurung & Rutledge, 2014). The findings of this study help to better understand middle school teachers and students' perception of digital literacy skills and teachers' perceptions of digital literacy skills as they relate to learning. Gaining insight into how students

perceive their digital literacy skills and how teachers perceive their students' digital literacy skills is the purpose of this qualitative case study.

This chapter will outline and provide background to the problem. When closely examining research on digital youth, the researcher observed gaps in the scholarly research on the topic of perceived digital skills of the middle school learner. As a result, the study enriched the current literature and explored teacher and student perceptions of digital literacy at the middle school level. A qualitative research approach provided an objective study of the problem and demonstrated the importance of exploring these perceptions in greater depth.

Background to the Problem

Professional educators continue to struggle to keep pace with the constant barrage of new technology innovations nearly every day. School district leaders and teachers are struggling to keep pace with emerging digital technologies while also seeking to ensure that students are learning the essential content and skills for lifelong success (Ascione, 2017). Though anecdotal evidence is plentiful, much less empirical data and qualitative research exist that studies the use of technology within students' formal learning contexts. This study explored both teacher and student perceptions of digital skills for learning.

First, this study explored teachers' perceptions of the digital competence of their students. Prensky (2001a) attempted to define new kinds of learners in the digital age, a young population he termed *digital natives*. The research studies reviewed found that the concept of digital natives centered on those born into a technology-centered world and possessing advanced digital skills. Researchers also posited that because these learners were constantly immersed in technology, they learned differently than previous generations (Oblinger & Oblinger, 2005; Palfrey & Gasser, 2008; Prensky, 2001b; Tapscott, 2009).

Subsequent research on the digital native concept, however, found little substantial evidence of such inborn digital characteristics in the new generation of learners (Gurung & Rutledge, 2014; Ng, 2012; Voogt, Erstad, Dede, & Mishra, 2013). Independent and confident with technology, today's learners outwardly exhibit what appears to be the seamless integration of digital tools into their daily lives outside of school, but the transference of those skills in the classroom may be lacking. Still, the concept of digital natives possessing unique digital skills and prowess remains pervasive in the global educational community, mostly unchallenged by the majority of educational institutions around the world (Gallardo-Echenique, Marqués-Molías, Bullen, & Strijbos, 2015).

Secondly, this study explored student perceptions of their digital skills. Research studies reviewed confirm that today's students are ubiquitous technology users, choosing digital tools as the preferred medium of choice for interaction and communication (Lai, Khaddage, & Knezek, 2013; Oh & Reeves, 2014; Turkle, 2015). By investigating teacher and student perceptions of digital literacy, this research shed new light on possible areas of digital literacy requiring more emphasis and development from both educator and learner.

Problem Statement

A significant void existed between the formal digital literacy skills students possess and the skills they need to be digitally competent. Technology literacy for learning should be as essential for life as it is for the social communication and entertainment on which today's students thrive (Hargattai, 2014; Kirschner & De Bruyckere, 2017). Students at increasingly younger ages have exposure to technology every day, but the question remains if formal and direct exposure to developing digital literacy skills for learning is keeping pace. The problem

this study explored was the perceptions of teachers and middle school students' digital literacy skills.

Purpose Statement

The purpose of this study was to explore the perceptions of teachers and middle school students' digital literacy skills to determine any gaps in students' digital competence for learning.

Research Questions

This research study focused on how teachers and students perceive students' digital literacy skills. To provide answers to the research questions, data were gathered through questionnaires, interviews, and focus groups. The following questions guided the investigation:

1. How do teachers perceive their students' digital literacy skills as effective for learning?
2. How do students perceive their digital literacy skills as effective for learning?

Rationale for the Methodology

Social inquiry and the ability to interpret individuals' perceptions and interpretations of their environments were essential to seeking answers to the research questions of this study; therefore, a qualitative approach served as the research methodology. This qualitative study explored two specific phenomena, the perceptions of middle school teachers and the perceptions of middle school students. The researcher anticipated discovering patterns of connection among student perceptions of their digital skills as well as unique, identifying patterns among the teachers' perceptions. Implementation of questionnaires, interviews, and focus groups allowed investigation of student and teacher perceptions of digital literacy thoroughly.

Research Design

The researcher used a qualitative case study design to investigate how teachers and students perceive students' digital skills (Creswell, 2013). Because a case study design

permitted the researcher to use various methods to collect data, it was essential that the focus of the study determine the methods utilized. Using questionnaires, interviews, and focus groups, the researcher expected a variety of perceptions depending on the teachers' experiences with middle school students. The advantage of using multiple data sources was to develop converging lines of inquiry, making the case study finding or conclusion more convincing and accurate when based on several different sources of information.

Questionnaires gathered data from teachers and students. Aside from the label of teacher questionnaire or student questionnaire, all answers will remain anonymous. A self-assessment of digital literacy skills designed utilizing a Likert scale aimed to provide truthful and honest answers.

Interviews of teachers and students allowed the researcher to uncover common themes and identify contrasting perspectives by analyzing the data collected. Both teachers and students participated in face-to-face interviews that were recorded and coded. Questions were methodically proposed in this order: questions regarding the everyday use of technology, questions asking for a definition of the term digital literacy, and questions regarding the application of digital literacy to technology skills.

After analysis of the individual teacher and student interviews, participants came together in two separate focus groups, one for students and one for teachers. The purpose was to confirm the participants' perceptions and clarify any questions for the researcher. The researcher shared data interpretations with the participants and provided a venue to clarify, expand on, or add details and perspectives on the topic of the study (Baxter & Jack, 2008).

Definitions of Terms

For this research study, the following definitions described and related to the research presented and defined the concepts under investigation.

Digital native: Digital native describes a person born into a digital world who is by nature more familiar and adept at technology than those born before the ubiquitous use of computers and the Internet (Prensky, 2001a).

Digital competence: Interchangeable with *digital literacy*, digital competence refers to the ability to explore new technological situations in a flexible way. This requires the ability to analyze, select and critically evaluate data and information and to use technology to represent and solve problems and build shared and collaborative knowledge. It also requires an awareness of one's responsibilities and the respect of reciprocal rights/obligations (Calvani, Cartelli, Fini, & Ranieri, 2008).

Middle School: Middle school refers to grades six, seven and eight.

Perception: Perception is the way in which something is regarded, understood, or interpreted (Oxford Living Dictionary, 2017).

Assumptions, Limitations, and Delimitations of the Research Study

The following assumptions were valid for this qualitative case study:

1. Assurance of confidentiality occurred through anonymous questionnaires, promoting an environment where participants felt comfortable in providing honest and truthful responses.

2. Safeguards were guaranteed for all who participated in focus groups and interviews and their perceptions and perspectives will remain anonymous with confidentiality maintained throughout the study.

Because this was a case study on the perceptions of digital literacy, one limitation was the small number of teacher and student participants; use of questionnaires in a limited sample may not yield the same results as similar research with much larger population samples. Secondly, the researcher had a professional relationship with the teachers who volunteered for the study; predetermined questionnaires and interview questions based on scholarly research mitigated bias. Third, the conceptual frameworks selected for this study to guide the structure and define digital literacy skills may also have been a limitation.

Choice of assessments to gather data may also have been a limitation, such as the participants' self-assessment of digital literacy utilizing a Likert-type scale, which assumed truthful and honest answers were provided. Student participants were not asked to demonstrate their digital skills outwardly and teachers were not asked to observe their students directly. Lastly, because there was a limited time frame for the study, this research was completed in one school semester with no follow-up. Although limitations exist, intentional triangulation of multiple sources of data increased the validity of the research (Yin, 2014).

The delimitation of this qualitative study was that the scope of this research study is limited to a Title I middle school in a small rural community in the Midwest that serves a high minority, high poverty student population. Teacher participants in the study were state-certified, highly-qualified teachers as defined by the State of Nebraska Department of Education. Due to the specific and unique cultural and regional characteristics of the community, the findings in this study may not apply to other communities or educational institutions. Other locations with similar settings and demographics, however, may be able to glean beneficial information from the research findings.

Chapter 1 Summary

This case study sought to understand how students perceive their digital literacy skills and how teachers perceive their students' digital literacy skills. According to the literature, the concept that today's students are digitally advanced simply because they were born into a digital world requires further examination. Researchers also assert that today's students mainly utilize digital tools for personal use, such as entertainment and communication (Bennett, 2012; Thompson, 2013). Although these personal technology uses require digital skills, they may inadequate in defining one as digitally literate. If students seem only comfortable with a limited range of technology tools, they may be lacking essential key skills in utilizing technology for collaboration and creating real-world knowledge. Digital-native youth may find themselves less academically skilled with the technology essential for learning (Gallardo-Echenique et al., 2015; Gurung & Rutledge, 2014; Kennedy & Fox, 2013; Voogt et al., 2013). The findings of this study may point toward a new understanding of middle school students' perceptions of their digital literacy skills and the teachers' perceptions of the same. The goal of this study was to identify any evidence that could better inform teachers of any gaps in students' digital learning skills and help progress them forward toward true and authentic digital literacy.

Chapter 2: Literature Review

Introduction

Today's students represent a distinctly different generation of learners, one surrounded by and immersed in a digital world that, for them, has always existed. Technology influences and digital connections consume the majority of these students' waking hours. They communicate electronically, write digitally, interact with peers through social media and text messaging, and view authorship in a unique, digital mode through media posts and blogs (Elmore, 2015; Prensky, 2010). As a result, there remains a persistent belief that today's learners are innately different, having been born into a digital world and possessing a unique relationship with technology in their daily lives. Early studies, focused on the existence of such digital natives (Gaston, 2006; Palfrey & Gasser, 2008; Prensky, 2001a; Prensky, 2001b), continue to permeate educational thought and influence instructional practice.

This chapter will consider the historical perspectives and evolution of thought as it relates to today's learners. A thorough review of the research will examine the perception that these young people are native-born digital experts, followed by comparing and contrasting opposing views that contend these students may be lacking essential technology skills for learning. The purpose of this study was to understand students' perceived digital competencies and compare them to teachers' perceptions of student technology skills for learning. Misconceptions about the depth of technology skills could affect instruction and compromise students' attainment of digital literacy.

This chapter begins with the introduction, the background to the problem, a conceptual framework, a review of the literature, and finally a chapter summary. The following keyword search terms guided the review: *digital native, digital literacy, digital learner, millennial,*

generation Y, digital divide, digital skills, 21st-century learning, 21st-century competencies. Databases utilized in the research were Sage Journals, Science Direct, Wiley Online, Taylor and Francis, JSTOR, ProQuest, ProQuest Education, and Google Scholar.

Background to the Study

Essential to understanding today's digital learners is to consider previous attempts to define this new type of learner. First, to describe learners born into a digital world, Prensky (2001a) introduced the term *digital natives*. This term describes those whose characteristics and interactions with technology are categorically different from previous generations due to their constant use of digital technologies. Others have backed similar labels such as the *millennials* (Downing, 2006; Oblinger & Oblinger, 2005; Simoneaux & Stroud, 2010), *generation Y* (Cantoni & Tardini, 2010; Djamasbi, Siege, & Tullis, 2010), and the *net generation* (Oblinger & Hawkins, 2005; Tapscott, 2009). Each of these monikers, or descriptors, attempted to define these learners as possessing advanced technology skills because they were born into a digital world. Some claimed that, because these learners constantly immersed themselves in technology, there was a distinct difference between how they as the current generation of students learned, as compared with previous generations (Oblinger & Oblinger, 2005; Palfrey & Gasser, 2008; Prensky, 2001a; Prensky, 2001b; Tapscott, 2009).

Prensky (2001a) contended these young digital learners had unique brain structures, enabling them to process information much more quickly, claiming they were native speakers of technology. In contrast, those born before the digital world were labeled *digital immigrants*, capable of learning technology but not to the level of understanding attainable by digital natives. The digital disconnect between the two groups, likened to two groups speaking distinctly different languages, raised serious questions with significant implications for education.

Beginning in 2008, skeptics of the digital native concept found there was little substantial evidence of inborn digital characteristics in today's learners (Bennett, Maton, & Kervin, 2008; Czerniewicz & Brown, 2010). Even though many authors wrote about students possessing an innate technology prowess, there were very few studies on the topic. Still, the idea of a generation of learners with distinct digital skills has remained quite pervasive and unchallenged by the majority of educators in developed countries around the world (Gallardo-Echenique et al., 2015). This digital native perception, though backed by little empirical data, continues to maintain that the digital native is somehow a different kind of learner that educators, the workplace, and society must embrace. If such digital prowess is not innate, then educator and student perceptions of digital literacy must be analyzed and critically evaluated to begin to understand potential obstacles to digital competence, even if they are unintended or misrepresented. This analysis begins with the need to define authentic digital literacy and identify the essential skills today's learners must possess to be literate, adaptable, and successful in a technology-saturated world.

Conceptual Framework

In this qualitative study, the researcher investigated the elements of digital literacy to provide a framework for the skills that embody authentic digital competence. Teacher and student perceptions of digital competence may center on individual paradigms and personal definitions of digital literacy. Defining digital literacy in a consistent and comprehensive context requires a conceptual framework is required. For this study, the researcher used Calvani et al.'s (2009) digital competence framework.

Calvani et al.'s digital competence framework. Calvani et al. (2009) created a conceptual framework to define digital competence based on prior research on the cognitive and

metacognitive dimensions as they related to technology. In essence, they found that digital competence is the convergence of three essential dimensions: technological, cognitive, and ethical. The first element, the technological dimension, involves the ability to approach digital contexts in novel and flexible ways. Individuals who use technology mainly as creators rather than consumers display technological competence, finding unique opportunities for utilizing technology to create and share new knowledge. Secondly, the cognitive dimension encompasses the skill of critically evaluating digital text and data with the ability to analyze their relevance and reliability. Individuals who carefully consider the sources of digital information and critically compare and contrast data to arrive at valid conclusions display cognitive digital competence. The third dimension of the framework is the ethical element of digital competence, the ability to interact productively with others using technology in responsible ways. Ethical digital competence encompasses behaviors that reflect an active, ethical awareness of the impact of digital actions on self and others. Those individuals who exhibit ethical digital competence understand the importance of respect and responsibility: protecting personal data, respecting others and their opinions online, and following digital and copyright laws.

At the center of the digital competence framework is *integrated literacy*, where one exploits the potential that technology affords to disseminate information and work with others to build new knowledge (Li & Ranieri, 2010). Calvani et al.'s (2009) framework underscores the goal of digital learners to possess the critical knowledge necessary to not only capitalize on technology's potential to positively impact the world, but also to critically analyze and recognize truth and engage in ethical digital behaviors in interactions with others.

Summary. Calvani et al.'s (2009) framework can inform the field of education as technology continues to take an increasingly more significant role in the classroom learning

experiences of teachers and students. Identifying digital competence must occur before defining it. Teachers who emphasize digital tools for creation rather than consumption can help students build new and valuable skills for creating new knowledge and interacting with technology in ways that can positively impact society. Teachers who emphasize the critical evaluation of information by demonstrating how to analyze digital sources for opinion or bias can help students to seek answers that lead to real knowledge. Finally, teachers who promote the digital skills students need to respect themselves and others while demonstrating ethical use of technology can create students who will make the world a better place.

Review of the Literature

A thorough understanding of today's digital learners, often viewed as a new and distinct group of students inhabiting classrooms across the globe, is required. Historical perspectives and evolution of thought related to their unique characteristics require further clarification. These learners, born into a digital world, possess a unique relationship with technology in their daily lives, so a closer examination of whether their skills are innate, shallow, or simply misunderstood is warranted in this study.

Perceptions of Today's Digital Learner Characteristics

According to literature written by the digital native proponents, several distinct characteristics that make these learners unique from those they call digital immigrants. Digital immigrants are those born before the advent of today's technologically driven society. The literature review that follows challenges the contention by digital native proponents that these learners possess unique and divergent qualities.

Digital natives are team-oriented and cooperative. Digital native proponents envision this select group of learners as naturally gifted with collaborative skills. Based on familiar

digital routines of today's learners, many students are unfamiliar with creating online collaborative workspaces for learning, and instead often demonstrate a high level of passivity, or digital consumption, for personal entertainment (Calvani, Fini, Ranieri, & Picci, 2012). If today's learners often struggle to know how to work effectively in collaborative teams, schools and educators need to take a closer look at why. A typical K—12 education primarily based on students working on their own to be successful is counterintuitive to collaborative learning, yet when students leave education, they are expected to know how to work with other people (Hancox, as cited in Greenberg & Nilssen, 2014). Educators unfamiliar with how best to implement such collaborative opportunities for learning may even risk ineffectiveness if there is an excessive focus on the social aspects of teamwork at the expense of learning (Thompson, 2013). Complicating the issue further, schools with high stakes tests results, individual work, and learners' educational achievements leave little time for cultivating collaborative skills in their students. As a result, opportunities for teamwork, group focus, and reaching out to learn from those outside the classroom falter, as do the skills essential for living and working in a global economy.

Globalization of the job market and rapid technological change is dictating the demand for new kinds of employees who can demonstrate the soft skills of working productively in teams, listening to diverse viewpoints, and solving real-world problems. Schools preparing their students for college and careers need to change course to respond to the demands of today's society. Collaboration and problem solving are the top soft skills companies around the world are calling for their workers to possess in a rapidly changing global economy.

Collaboration as a skill, however, is often mistaken as cooperation, and if schools are to fill the soft skills gap, it is essential to distinguish the two. Most often in classrooms there is

more of an emphasis on cooperation, where students are encouraged as individuals to get along, exhibiting polite behaviors that reflect acceptance of their peers. By contrast, collaboration "requires a more complex range of interactions, with individual skills linked to learner skill sets. It also calls for a 'messier,' less easy-to-measure process that pushes learners and educators out of their normal comfort zones" (Greenberg & Nilssen, 2014, p. 9). Students new to collaborative activities learn to use polite behaviors as well, but they also develop the ability to disagree, debate the issues, and reach consensus. Collaboration requires endless opportunities to connect, interact, and learn from others.

If teamwork and collaboration are critical aptitudes on which schools should focus, educators can benefit their students by modeling important behaviors and providing frequent opportunities for students to work together and practice collaboration skills. Lee, Tsai, Chai, and Koh (2014) described such interactions as demonstrating respect for others, communicating effectively, and choosing behaviors that show authentic collaboration. Students who are expected to collaborate online, where communication often lacks critical visual cues and face-to-face context, will find communicating more difficult if not first practiced in the classroom. Students need real-world practice in soft skills, reading verbal and non-verbal clues and respecting others' opinions by actively listening (Greenberg & Nilssen, 2014). Today's learners are not team-oriented or collaborative by nature, but educators can contribute to students' essential marketable skill set by modeling collaborative learning and providing frequent opportunities to engage with others in a team-oriented classroom environment that reaches beyond the school walls.

Digital natives are efficient multitaskers with different digital technologies. Schwartz and Porath (2014) identified rapid technological change as a significant reason that people lose

thinking time because digital tools are always on, compelling them to respond by picking up, reading, and responding, regardless of the time, day or night. The impression that today's digital learner is skillfully adept at a myriad of technologies, effortlessly balancing several different technologies at once, has given way to the popular moniker, the multitasker. Defined by popular culture, multitasking is assumed to mean the simultaneous execution of two or more cognitive tasks, such as driving a car and talking on a cell phone, but this is not the case.

Kirschner and van Merrienboer (2013) studied this phenomenon and reached the conclusion that there are two distinct and unique human behaviors involved—multitasking and task switching, and the two are not synonymous. Multitasking involves automated tasks that human beings execute, such as walking and talking. Task switching, by contrast, requires dividing attention and cognitive resources between tasks, resulting in one task interfering with the other and causing a split in cognitive focus.

Human cognitive architecture and brain functioning only allow for switching between different tasks (i.e., performing a number of different tasks or partialtasks in quick succession) rather than the simultaneous performance of tasks, even though the performance seems subjectively to occur simultaneously. Human beings can do more than one thing at any one time only when what they are doing is fully automated (Kirschner & van Merrienboer, 2013, p. 171).

The issue with multitasking is that when the brain tries to perform more than one task at a time, an attentional bottleneck (Tombu et al., 2011) occurs, causing the delay of one task in favor of the other. This information processing traffic jam makes it impossible to focus on multiple tasks simultaneously. Adding a second task requires a division of attention, and the new information splinters. Conversely, focusing on a single cognitive task will keep the information intact with less chance for major mistakes. However, when the brain gathers information

through multitasking, or disruption from another task, it is increasingly likely that performance suffers (Sana, Weston, & Cepeda, 2013).

In his book *The Shallows: What the Internet is Doing to Our Brains*, Carr (2010) likened multitasking to a juggling act, constantly overloading the brain's working memory with information. Each time a person tries to switch focus and attention, it challenges mental capacity, and the brain must work harder at reorienting itself. These shifts come at a cost; the more the brain is required to switch its focus, the more it is likely that cognition is compromised and the information is lost, garbled, or misunderstood.

When today's digital learners appear to be good multitaskers, what is more accurate is that, with constant repetition and practice, they have become seemingly adept as quick task switchers. Such task shuffling manifests itself in greater inefficiency to perform tasks well, creating opportunities for more errors and extended processing time. For example, if a teen is working on homework and at the same time picking up a cell phone to check it every time it buzzes, the attempt at completing homework becomes less efficient than if the student's focus was placed solely on the assignment. This problem is not limited to young people, as rapid task switching by emergency room physicians and airplane pilots has been found to be one of the most common causes of both medical and pilot errors (Kirschner & van Merrienboer, 2013).

In the educational realm, the effects of multitasking and task switching do not fare any better; in fact, even if the tasks are related to instruction, these behaviors negatively impact learning and performance, and impaired performance due to multitasking may not produce positive learning results. Non-instructional digital behaviors in the classroom fare even worse. Students who access technology during instruction to view YouTube for entertainment, text their peers, or post to social media during class impact not only themselves but their peers as well.

According to a study by Ravizza, Hambrick, and Fenn (2014), non-academic Internet use during class affects all learners, regardless of intellectual ability. Their research revealed that this type of multitasking behavior impeded performance and predicted lower performance on class assessments for all students.

Proximity to students who multitask with technology can also be a problem. As Turkle (2015) described it, distracted students become a distraction. Sana et al. (2013) agreed, finding that students within visual proximity to a multitasking peer scored lower on a test compared to those who were not within view. These results also emphasize that multitasking with technology in class creates an environment where the distraction can detrimentally affect the comprehension of class content for both the users and those students around them (Sana et al., 2013).

The rapid task switching behaviors of today's digital learners are also influencing how students read. They tend to jump back and forth with digital text on the screen, choosing to click or not to click, jumping to the next topic, unaware of its value and without rhyme or reason (De Bruyckere, Kirschner, & Hulshof, 2015). Implications for deep comprehension and meaning are sobering. Although the reading skill of skimming a passage or article has merit for specific uses, it is becoming the norm of the digital learner. Hyperlinked text, with its beckoning, non-linear distractibility, may be one cause of the superficial nature of today's students' reading habits. A screen-based approach to reading, inundating today's computers and phones, is now more than ever an exercise in skimming and browsing, zipping through text one time, and jumping around the page (Carr, 2010). Meanwhile, time spent in deep and focused reading for comprehension is declining steadily.

Today's learners may live in a digital world, but they have not demonstrated a strong ability, or aptitude, for utilizing technology successfully for learning. Kirschner and van

Merrienboer (2013) expressed concern that student learning may be negatively affected if teachers continue to believe that these young learners can efficiently multitask. In fact, if educators continue to persist in these beliefs, they will be limiting their students' capacities for controlling their learning in a digitally dominant society. Psychologists describe children who grow up in a heavy multitasking environment as unable to display deep attention for a subject or topic because they have not had an opportunity to practice it. Turkle (2015) emphasized that attentional pluralism should be the educational goal. Students possessing attentional pluralism are those who are skilled at knowing when multitasking is appropriate, but they also can shift into singular focus when the situation warrants deeper attention.

Digital natives are passionate about changing the world with technology. Digital learners' use of technology is constant, but their activities and skills revolve mainly around social media, searching for quick information on the Web, and texting. As consumers of digital content, the majority of the time, they use technology for personal entertainment and connection but do not display adept academic skills essential for learning in a digital world. Student engagement for learning is limited, and rarely does it include creating digital content, using digital research to discern reliable information from false information, or using technology for critical thinking. Content creation for academic purposes is limited, with little evidence that students are applying their technology use to create content specifically for learning in the classroom (Gurung & Rutledge, 2014; Kennedy & Fox, 2013).

Video is another digital activity today's learners access frequently, but more for consumption than creation, for entertainment more than academic learning. Rubenstein (2017) described the compelling influence of video in education as a communication tool, yet without the purposeful teaching of critical thinking and evaluation skills, teachers are not serving

students' need to determine truth from fiction. The impactful qualities of video—the personal connection, the realistic visual effects, the tie to one's emotions—that make video an extremely compelling communication tool also make conditions ripe for the potential dissemination of propaganda. When students seek out videos online, most often for entertainment, they are passive consumers of content, and the danger is that YouTube becomes a venue of truth-seeking, when, in reality, anyone can upload anything to the Internet. Creating a digitally literate student who can critically evaluate digital media requires educators to move past consumption and provide ample opportunities for academic content creation in digital environments.

In a focus group study conducted by Ballano, Uribe, and Munté-Ramos (2014), today's learners viewed themselves as online participants continually living in a digital world yet did not see themselves as valid contributors to online content. Few considered themselves as content creators, and even if they stated they wrote a blog or had their own video channel, they did not see it as content creation, but more of a conversation with their peers. Educators viewed students as technologically skilled but lacking the critical thinking skills to determine valid sources and ethical use of sources. The majority of teachers in Ballano et al.'s (2014) study agreed that students lacked the digital skills to choose trustworthy sources and did not understand or respect others' intellectual property.

Educators can fill the gap by providing opportunities for digital content creation in the classroom, providing the tools and guidance necessary for meaningful learning engagement and the development of critical thinking skills. Content creation also requires creativity, a skill today's employers seek highly. Innovation requires creative minds, and that is what sets nations apart when competing on the world stage. The success of today's economies and future economies depend on those who can be innovative and creative (Runco, Acar, & Cayirdag,

2017). Developing content creation-skilled learners is essential, and educators at all levels must emphasize and value online creativity for both academic and future workforce uses.

Online content creation moves the digital learner from consumer to creator, and students need encouragement and guidance from teachers to use their voices to communicate respectfully and responsibly as digitally literate and ethical citizens. Rubenstein (2017) expressed words of caution that a subtle digital divide could emerge, where students who have developed the digital skills to be creators and problem solvers will surpass students who are merely digital consumers. As the future of critical discussion and thought is going to happen largely in a digital world, students who will most significantly influence the world will be those capable of creating new solutions and solving problems using technology.

Digital natives possess an inborn technology prowess. Regarding the concept of digital natives and their innate technology skills, it is risky to assume that youth are automatically informed, just as it is dangerous to assume that those who may be considered digital immigrants have no value to add. Becoming digitally literate in a technological society requires developing key competencies through focused effort and persistence, just as it does in the core subjects of reading, writing, and math (Hatlevik, Guomundsdottir, & Loi, 2015). Based on unfounded reasoning and anecdotal evidence, assumptions exist that immersion in a technology-rich world environment alone creates digitally competent learners. The fact is that today's learners may not even understand or have the direction necessary to use technology effectively in the context of learning.

Another finding that contradicts the idea of innate digital skills in today’s learners is the research that finds that socio-economic factors affecting technology access may play a significant role in digital competence. Researchers concluded that social differences outside of

school are influencing online activities, self-representation, and digital equity (Boyd, 2014; Selwyn, 2009). Hatlevik et al. (2015) identified three socio-economic and cultural factors in students' family backgrounds that may influence digital equity—parental background, language at home, and cultural goods, such as the number of books at home.

Socio-economic status may influence digital literacy due to a lack of digital access or equity. Students who have access to wireless Internet and digital tools outside of the school day may spend more time collaborating on an online project for an assignment than the students who have no Internet other than through their cell phone's data plan. Such disparate conditions for support of digital learning at home may be hindering learners' opportunities to become digitally literate and instead may be negatively impacting their digital skills at school. The idea of cultural goods, or the 'number of books at home' indicator is based on the theory by Bourdieu and Thompson (1991) that books are a proxy of cultural capital. Several studies have found that socioeconomic background, or cultural capital, is positively correlated with digital competence in school (Hatlevik & Christophersen, 2013; Hatlevik et al., 2015).

The International Computer and Information Literacy Study (Fraillon, Ainley, Schulz, Friedman, & Gebhardt, 2014) included students' language background as part of the students' home environment. Other studies indicated that language integration, measured by language at home, is correlated with students' digital literacy (Hatlevik & Christophersen, 2013; Hatlevik et al., 2015). Home environment, such as language and family background may, in fact, indicate disparities between students when using technology for learning at school (Calvani et al., 2012; Fraillon et al., 2014). Similar to kindergarteners whose parents speak a language other than English at home starting school behind their peers in reading, students with little or no technology access at home may also possess a measurable gap in digital skills for learning.

Digital literacy concerns for today's learners also display in critical evaluation of digital media. As part of a recent study, *News and America's Kids: How Young People Perceive and are Impacted by the News* (Robb, 2017), students age 10–18 representing several racial and ethnical groups participated in an online survey. Results indicated several items of concern regarding these digitally connected young learners. The first conclusion of the study was that today's students struggle in deciphering fake online news stories from real ones. More than one-third of the respondents acknowledged sharing a story online that they later learned was false or inaccurate, and these experiences may be a reason that only a quarter of those surveyed put much trust in the information from news sources. The recent increase in what is termed fake news also makes students' abilities to decipher and analyze news sources more and more complicated.

Conversely, today's students do trust news information from their families the most, with teachers coming in as second most trusted. Findings indicated that more children trust the news they hear from the people in their lives than that from traditional news organizations (Robb, 2017). Social media is also a popular source for online news, preferring Facebook as the most common source followed by YouTube (Robb, 2017). A large number of students who use social media as a news source do attempt to identify the sources of the stories' links and where it directs them. The concern is that more than one-third of those surveyed admitted paying very little to no attention to the origination of the online article.

Confirming the reliability and trustworthiness of an online news source is another concern. When asked if students validate the information in an online news story, the majority of those interviewed who get their news online say that when reading information in a news story that might be wrong, they might try figure out whether it is true or not. Alarming, however, is

that almost 30% say they rarely or never do this (Robb, 2017). Educators cannot continue to assume digital learners possess inborn skills.

Digital competence is not innate, and even though the presumption of the digital native persists, technology should not be viewed as capable of influencing students to the point that it replaces the teacher's role (Thompson, 2013). Digital skills for learning are not absorbed simply through a young person's environment, and teachers have a significant and essential role in developing digitally competent, lifelong learners. Directing students to locate, identify, evaluate, and use online information effectively will develop strong digital competences. Providing learners with the tools in a complex technological society to decipher, delineate, and validate information in a world of fake news is increasingly urgent and necessary.

Digital natives possess new learning styles and methods for understanding. A prevalent and persistent belief in the existence of digital natives continues to influence the field of education. Livingstone, Haddon, Göerzig, and Ólafsson (2011) even placed the term 'digital native' in first place on its list of the 10 biggest myths about young people and technology. Rather than focus on empirical evidence, educational leaders today continue to make decisions for change based on anecdotal evidence of these innately skilled digital learners walking the hallways of their schools. Perpetuating the existence of this type of learner "may also lead instructors to make unsupported assumptions about their students' mastery of educational technology and therefore neglect to teach students the skills they need for academic success" (Thompson, 2013, p. 12-13). The unchecked yet prevalent notion that today's digital learners have sophisticated technological abilities is unfounded. When Calvani et al. (2012) asked a group of students to grapple with complex tasks, such as those that computers can perform and those that computers cannot perform, they found that students' skills were quite low.

If educators believe the widespread assumption that today's learners are digitally savvy, there exists no demand or urgency to teach technology skills for learning to create digitally literate students. Teachers may not think it necessary to spend the time developing students' digital skills when the appearance is that students already have a mastery of technology because their learners appear so adept. These pervasive assumptions that today's students are digitally competent are creating an environment that is failing a generation by ignoring the essential needs to provide the necessary skills to be digitally literate members of society (Hargattai, 2014).

With a steady increase in empirical data showing a wide variation of digital skills in today's learners, perpetuating the idea of a digital native is counterproductive and ignores the essential premise that acquiring digital skills for learning is an intentional, not an innate, process. Kirschner and De Bruyckere (2017) agreed and posited that continuing to perpetuate the myth of the digital native holds back the urgent need to develop their digital skills for learning. If schools, administrators, and teachers assume every student who walks in the door is digitally competent, they are not serving their charges. Hargattai (2014) pursued this further, stating that this assumption may, in fact, be stoking the societal inequalities that exist between the poor and the privileged and the opportunity to exploit the advantages of equal access to digital tools for learning.

In the book *Born Digital*, digital native proponents Palfrey and Gasser (2008) claimed a new kind of learner who grazes the Internet and picks up small bits of information online. The problem with this type of cognitive processing is it is what Clowes (2013) considered *e-memory*, information that is not retained in the brain but instead offloaded to a digital device for retrieval on demand. An example might be using a navigation app on a cell phone or in a car to reach a destination. Online searches tend to return what is asked for, limited to the specific information

needed at that particular moment; their purpose is not to gather and generate information that may be critically useful later (Turkle, 2015). When students rely on *e-memory* more often than the vast array of information they have studied in depth and cataloged in long-term memory, the conditions for thinking creatively significantly diminish. Turkle (2015) also questioned whether this kind of immediate information tailored only for the moment at hand could actually teach students to create and organize their own ideas and come up with their own conclusions.

In his book *The Next America: Boomers, Millennial, and the Looming Generational Showdown*, Taylor (2015) predicted the challenge of the future will be to separate human motivation and thought from the technological, always available information that digital devices provide. Barry Chudakov, a research fellow at the University of Toronto, believed that by 2020, "there will be a new premium on the skill of maintaining presence, of mindfulness, of awareness in the face of persistent and pervasive tool extensions and incursions into our lives. Is this my intention, or is the tool inciting me to feel and think this way?" (Taylor, 2015, p. 194).

Finally, the idea that digital students possess new ways of learning, and that educators and their pedagogical methods must adapt to them, is an assumption based on anecdotal evidence. Today's digital learners may in fact be more tolerant and accepting of their teachers' methods of instruction than the anecdotal evidence of the digital native would suggest. Students want teachers to creatively implement technology and other tools to build an environment where learning is enjoyable, but they do not possess a constant need to be entertained (Thompson, 2013). Educators must willingly and deliberately push the digital native myth aside and focus ahead on empowering today's learners, infusing the appropriate and timely digital literacy skills into curricula. Only then can teachers guarantee that they are not failing a generation when it comes to equipping students with digital competence for lifelong learning.

Digital natives desire anytime/anywhere connectedness. Today's learners are more likely to utilize technology for entertainment and social connections (Oh & Reeves, 2014), and tend to limit technology use to entertaining themselves and staying current with friends. Lai et al. (2013) found youth's three most frequent online activities as social networking, gaming, and watching videos. Socially attached, these learners thrive on connectedness and multitasking, not wanting to miss out on whatever is currently happening, whether it is pop culture, sports, or keeping up with their peers. Similar research findings from Thompson (2013) echoed this desire for connection, claiming cell phones and the Internet as the most frequently identified activities for student use. Also, most Internet activities most often were limited to quick, superficial online searches, watching online videos, and listening to music online.

According to Turkle (2015), studies found that one in four teens connect to a digital device within five minutes of waking up. Teens also text between 30 and 100 messages every day, and only 20% do not take their phones to bed at night. Almost half of all teens never disconnect, including while exercising, participating in sports, or attending church. Today's digital learners display through their actions that they expect a constant technology connection, treating their devices as if they were extensions of their physical bodies—aptly described as living a tethered life (Turkle, 2011).

With such a need for connectedness, it is not surprising that students who use a handheld digital device in school find it difficult to concentrate on learning. Knowing they can connect with their peers, play games, and switch tasks quickly easily leads to distraction, and it is not only they who lose focus but their proximal classmates' abilities to focus as well. Students today are challenged constantly in a digital environment, with technology vying for their attention at every turn. Educators must call on their own learning experiences, teaching students how to

maximize attention, maintain focus, and minimize distraction with their digital tools. Conversely, completely disconnecting from technology can be highly productive. Scholars, writers, scientists, and other professionals share that their creative work is more productive when Wi-Fi is turned off on their computers (Turkle, 2015). Today's digital learners need ample opportunities for making decisions about whether a learning task is best served with or without digital tools. Creativity, contemplation, and deep, intellectual thought require self-attention and solitude.

Buckner, Andrews-Hanna, and Schacter (2008) posited that when one is internally focused, or in solitude, the "default mode network" of the brain is stimulated, allowing for construction of a stable sense of self (p. 1). This default network is engaged when a person remembers life experiences, imagines the future, and thinks about the perspectives of others (Buckner et al., 2008). Today's digital learners, craving constant digital connection, will unconsciously deny themselves this important internal and reflective thought process unless educators provide intentional learning opportunities where students can practice mindfulness and focus.

Educators can intentionally encourage students to become comfortable with the quietness of purposeful thought. This direct guidance teaches students that "such moments—when you stay with your thoughts—have a payoff. We can present classrooms as places where you can encounter a moment of boredom and 'walk' toward its challenges" (Turkle, 2015, p. 218). Today's digital learners will become more digitally literate when they can successfully determine when to use technology for the right purpose and when to rely on the power of digital disconnection.

Potential Gaps in Technology Skills for Learning

Putting aside the attempt at appropriate labels, today's digital learners may not be as technologically advanced as teachers and society have been made to believe. Although their personal use of technology is widespread, digital learners lack the types of academic skills that are essential for learning (Gurung & Rutledge, 2014). A recent study on today's digital learners determined that the digital native literature that speaks of students' advanced digital skills and self-confidence shows their digital literacy may actually be lower than their adult teachers (Gallardo-Echenique et al., 2015). Much of the discussion of young people and their technology prowess is exaggerated or inaccurate and claims of digitally innate skills are most often rooted in an anecdote or informal observations. Very few empirical studies exist to support the claim that young people possess inborn digital skills.

A significant generational divide between the digital natives and digital immigrants, though anecdotal, is not reliably supported by empirical data (Bennett & Maton, 2010; Helsper & Enyon, 2010). In fact, this flawed perception could potentially prove harmful if educators mistakenly assume a level of knowledge that may not be accurate for all students. Also, if teachers and parents view these learners as more digitally competent, they could feel powerless and inadequate in trying to support student use of technology for learning.

Educators' thorough grasp of the learning characteristics of today's digital students is "a key factor affecting the decision of what and how pedagogies will be employed in their teaching and that it will ultimately impact the success of their students' learning" (Lai & Hong, 2015, p. 725). Thinyane (2010) claimed that while the digital native discourse might direct society to believe that learners born into a digital world are self-sufficient and independent learners merely because technology surrounds them, research evidence does not support it. Instead, the influence

of technology is only one of many in the learning process of students, and teachers will have a significant role to play in guiding these digital learners to achieve desired learning goals and educational outcomes (Teo, 2013). An intentional, focused effort and approach from educators will be required to impact student belief systems on the use of digital tools to ensure a greater depth of competency in utilizing technology for learning.

Chapter 2 Summary

The focus of this qualitative case study was to investigate some teacher perceptions of middle school students' digital literacy skills and explore those skills middle school students perceive they possess. Outwardly confident and adept at utilizing technology for social, communication, and entertainment purposes, today's digital learners may appear to be very technically competent, innately gifted naturals. The urgent drive of school districts across the country to implement 1:1 technology initiatives illustrates the popular mindset that students need simply to have a device to succeed. However, on closer examination, today's digital learners may, in fact, possess very shallow and superficial digital literacy skills for learning. "Because of the ubiquitous use of technology in our society, schools and universities often assume that their students are digitally literate, but it is becoming increasingly clear that students differ greatly in their use of technology and therefore in their technology skills" (Voogt et al., 2013, p. 410). They consider Google a verb, view images and video more than they read, and lack critical and analytical thinking skills necessary to discern the validity of online information. Simply placing devices into the hands of today's learners is not enough, and the misconception that students are already digitally competent and technologically advanced overlooks the importance of explicitly teaching digital literacy for lifelong learning.

Technology has a significant influence on today's learners, but it is not the only influence students need to succeed. Educators must focus purposely and intentionally on their essential roles, navigating students through the infinite possibilities and inevitable challenges of learning in the digital world. This study shed light on how teachers and their students perceive student digital competency for learning.

Chapter 3: Methodology

Introduction

The purpose of this qualitative case study was to explore teachers' and students' perceptions of digital literacy in central Nebraska. This case study used the digital competence framework of Calvani et al. (2009) to define and analyze digital literacy skills as they applied to both middle school teachers and middle school students' perceptions of digital competence. This chapter outlines the chosen methodology of the study, defining the research questions, purpose and design, research population and sampling method, and the data sources the study utilized. Limitations, assumptions, and delimitations of the qualitative study are described.

Statement of the Problem

The problem this case study explored was the perceptions of teachers and middle school students' digital literacy skills in central Nebraska**.** Educators and schools are continuously striving to keep pace with the constant disruptions and changes that new technological innovations bring to the field of education. Schools struggle to keep up with the latest advances while also seeking to ensure that students are learning the essential content and skills for lifelong success. Though anecdotal evidence is plentiful, much less empirical data and qualitative research exist that study the use of technology within students' formal learning contexts.

Previous work by Prensky (2001a), Oblinger and Oblinger, (2005), Palfrey and Gasser (2008), Tapscott, (2009) and others contended that today's digital learners' skills are much more developed and at a more highly sophisticated level than that of previous generations. On closer examination, however, much of their work lacks empirical evidence and relies on anecdotal evidence. Each of the descriptors these researchers employ attempt to define these learners as

possessing enviable, advanced technology skills solely because they were born into a digital world.

On the other hand, Head and Eisenberg (2010) found that youth are much more inclined to use digital tools primarily for personal entertainment and communicating with peers. In another study, Margaryan, Littlejohn, and Vojt (2011) reported that today's students utilize a small range of technology tools, and their use of Web 2.0 tools for collaboration and knowledge creation is quite limited. Even though this personal use of technology is prevalent among today's students, Gurung and Rutledge (2014) concluded that these digital-native youths are not equally academically skilled with technology essential for learning. This study explored middle school teachers' and students' perceptions of student digital literacy skills for learning, warranting a closer examination of technology use in structured academic contexts.

Discussions involving the use of Web 2.0 technologies in education have resulted in concerns that practical applications may be ambiguous due to significant differences between casual technology use and formal educational contexts (Dohn, 2009). Because of the ubiquitous use of technology in our society, schools and universities often assume that their students are digitally literate, but it is becoming increasingly clear that students differ significantly in their use of technology and therefore in their technology skills (Voogt et al., 2013, p. 410).

Research Questions

This study focused on the perceptions of teachers and students regarding digital literacy skills. The researcher seeks to explore these questions:

RQ_1. How do middle school teachers perceive their students' digital skills as effective for learning?

RQ_2. How do middle school students perceive their digital skills as effective for learning?

These research questions emphasize the need to consider the environments, formal and informal, in which technologies are most frequently used and how they can impact and improve learning (Bennett, 2012).

Research Methodology

A qualitative case study approach was appropriate for this research due to the value of studying a single-school environment closely. According to Yin (2014), case study research has a distinct advantage when a "how" or "why" question is proposed about a modern course of events over which the researcher has little or no control. Qualitative methods provide an opportunity to study these contexts as a whole without isolating or disconnecting them.

A gap existed in qualitative research that studies technology use in greater depth and within individuals' contexts (Bennett, 2012). Today's digital learners frequently have superficial skills and limited knowledge of using technology for learning, and there is a clear gap between what they are learning about digital literacy skills and what they should be learning. Using technology for learning should be as essential for life as it is for entertainment and social communication (Oh & Reeves, 2014). The question is whether educators are aiding today's digital learners in gaining skills for their future in a fast-changing digital world, where even toddlers' favorite toys are smartphones (Stout, 2010). Educators' thorough grasp of the learning characteristics of today's digital students is a key factor in deciding what pedagogies will be employed in the teaching process and will ultimately impact the success of their students' learning (Lai & Hong, 2015).

Notably, the need existed for qualitative research to uncover the potential for technology to bridge the digital learning gap and create a generation of empowered, digitally literate learners. This research was essential so educators can make more informed, forward-thinking

decisions regarding technology for teaching and learning. A qualitative research approach to this study was appropriate because its purpose focuses on exploring both student and teacher perceptions of students' digital literacy skills. Examining students and teachers side-by-side allows for comparisons and analysis of two different perspectives on what it means to be digitally literate. The comparative analysis aimed to identify any difference in perspectives regarding the definition of digital literacy as it applies to learning. Understanding the paradigms of both teachers and students provided insight into any discrepancies or errors in thinking about what skills and competencies define the digital learner. Teachers' misconceptions regarding students' depth of digital literacy skills could negatively impact educator effectiveness in developing essential digital literacy skills for learning.

Research Design

Qualitative case study design permitted the researcher to utilize various methods to collect data; it was essential that the focus of the study determine the methods utilized. Questionnaires, interviews, and focus groups provided a variety of perceptions depending on the teachers' experiences with middle school students. The researcher triangulated the data to assure reliability of the results. The advantage of using multiple data sources was to develop converging lines of inquiry, making the case study finding or conclusion more convincing and accurate when based on several different sources of information.

The goal of this case study was to describe middle school teachers' and students' perceptions of digital literacy skills. The study may lead to further examination of misconceptions that impact digital learning. A case study widens rather than narrows; there is most often more to pay attention to rather than less. A case study attends to the idiosyncratic more than to the pervasive (Stake, 1978). By employing a variety of case study evidence, the

researcher provided a more detailed view of teacher and student perceptions of digital literacy skills.

Yin (2014) stated that the case study method is preferred when examining contemporary events, but when relevant behaviors cannot be manipulated. This case study met the requirements of the phenomenon being examined because 1) it is a contemporary event (teacher and student perceptions of digital literacy skills), and 2) the behaviors of the participants will not be manipulated. Finally, a case study approach is applicable because the study's focus is on the clear boundaries of one school setting, and the researcher has access to a wide array of contextual information from which to accurately describe the setting (Creswell, 2013). The choice of a case study approach that utilized multiple information sources to provide an in-depth picture, culminating in identifying generalizations to be learned from issues that emerged, was appropriate for the scope of this research.

Research Population and Sampling Method

The study was conducted in a public middle school located in central Nebraska. In 2010, this rural community had a population of 7,282 people (United States Census Bureau, 2010). According to the 2010 U. S. Census, the racial and ethnic composition of the community reported as 60% Hispanic, 34% Caucasian, and 6% other. A meatpacking plant is the largest employer in this small community where the majority of students' parents are shift workers. The public-school district is comprised of approximately 1,961 students representing more than eight nationalities in pre-kindergarten through 12th grade (United States Census Bureau, 2010). District-wide, more than 82% of students are Hispanic or Latino. The middle school contains sixth through eighth grades, comprised of approximately 355 students across the three grades. The school's student attendance rate averages around 96%, with more than 85% of students who

also qualify for free or reduced meals (Nebraska Department of Education, 2015). The middle school's students report as 84% Hispanic or Latino, 11% Caucasian, and 5% other (Nebraska Department of Education, 2015). Each grade level maintains five to six core subject teachers, and 10 non-core teachers serve all grades, six through eight. In addition, there are three special education teachers and two English Language Learner (ELL) teachers. Nine percent of the school's student population qualifies for special education services, with 31% of the population designated as ELL students. This study used the middle school due to its proximity and access for the researcher, a non-core teacher in the building.

According to Creswell (2013), researchers conducting case studies should include between five and 25 persons who have experience with the subject of the study. The 14 participants in this study included seven middle-grade level teachers, two each from Grades 6 through 8, including one non-core teacher. An initial invitation to participate in this study was circulated via the school's certified staff email group. The other seven participants were eighth grade students who were completing their final year at the middle school. Students were invited to participate through the school's eighth-grade class email group via the school district's Google email domain.

It should be noted that non-English speaking students and those students enrolled in the middle school's English Language Learners (ELL) classes were excluded from the participant sample. Teachers were selected based on the above requirements with the first seven who responded. Students were selected based on the order in which the parental consent forms were returned to the researcher.

Sources of Data

Data were collected using anonymous online questionnaires, face-to-face interviews, and focus groups. Maintaining consistent, well-constructed interview questions for each participant ensured reliability (Yin, 2014). Each respondent answered the interview questions listed in Appendices G and H. The researcher's ultimate responsibility is to protect all persons involved in a study of a phenomenon in a real-world setting. This responsibility requires special and ethical consideration of the human participants, specifically "gaining informed consent from all persons who may be part of [the] case study, by alerting them to the nature of [the] case study and formally soliciting their volunteerism in participating" (Yin, 2014, p. 78). Before the research study was implemented, all participants read and signed a consent form (see Appendices A, B, C, and D). The student consent required written permission from the student's parent or guardian. Students also signed assent forms, since they are minors.

At the start of the study, each participant independently completed an online questionnaire on perceptions of student digital literacy skills (see Appendices E and F). Additional researcher-created instruments utilized in this study included an interview guide for students (see Appendix G) and an interview guide for teachers (see Appendix H). Both interview guides were pilot tested, adjusted, and modified as warranted. Students and teachers were notified that all answers to the questionnaires and interview questions would be confidential, and identities would remain anonymous for the sole purpose of research. Following completion of both online questionnaires and interviews, the researcher reviewed and analyzed the collected data. Focus groups were then conducted for both the teacher group and the student group to 1) confirm the data, and 2) obtain any additional or incomplete information from the participants (see Appendices I and J).

Using the participants' email addresses obtained through the school district's email directory, an Internet questionnaire was sent to all teacher and student participants with a special anonymous code to ensure source validity. The questionnaire asked the participant to identify as a teacher or a student, but no other identifying information was requested. The questionnaire was created using Qualtrics software, comprised of open-ended and Likert scale questions. The results were automatically compiled for further analysis. Using the digital competence framework of Calvani et al. (2009), the results were described in narrative form to determine patterns or themes that emerged. Questionnaire content assimilated information and questions from previously published studies on digital literacy skills (Purcell et al., 2012) and the researcher's teaching curriculum in digital literacy. The online questionnaire was first piloted with teachers and students not involved in the study to confirm its alignment with the study's research questions.

Upon completion of the online Qualtrics questionnaire, semi-structured, face-to-face interviews were scheduled with each participant. A one-on-one session with each participant provided the researcher with observable data that could be recorded to describe the perspectives and paradigms of each person on digital literacy skills. Interview questions contained original content from the researcher as well as questions from previous studies on digital literacy skills (Spengler, 2015). The interview questions were first piloted with teachers and students not involved in the study to confirm question clarity and understanding.

Finally, upon analysis of the individual interviews, participants came together in two separate focus groups, one for students and one for teachers. The purpose was to confirm the participants' perceptions and clarify any questions for the researcher. The sessions were

audiotaped, with previously printed questions circulated to the whole group so each participant could respond in roundtable format while the researcher listened.

Definitions of Terms

For the purposes of this research study, the following definitions were used to describe and relate to the research presented and also to define the concepts under investigation.

Digital native: Digital native describes a person born into a digital world who is by nature more familiar and adept at technology than those born before the ubiquitous use of computers and the Internet (Prensky, 2001a).

Digital competence: Interchangeable with *digital literacy*, digital competence refers to the ability to explore new technological situations in a flexible way. This requires the ability to analyze, select and critically evaluate data and information and to use technology to represent and solve problems and build shared and collaborative knowledge. It also requires an awareness of one's personal responsibilities and the respect of reciprocal rights/obligations (Calvani et al., 2008).

Middle School: Middle school refers to grades six, seven and eight.

Perception: Perception is the way in which something is regarded, understood, or interpreted (Oxford Living Dictionary, 2017).

Data Analysis Procedures

A set of substantive questions is the central part of a case study, questions that define the researcher's path of inquiry. This type of examination requires the researcher to understand that the questions are not designed to be directed at the participant; instead, they are designed to keep the researcher on track, to remind her or him of the information to be collected and why.

First, the researcher concentrated on the purpose of each question as it relates to

gathering specific information for the case study. Secondly, the initial questions created were piloted to ensure the research questions of the study support them. Third, these questions were posed in each of the participant interviews, aligned to the essential research questions articulated in the study. Additional questions provided more to consider after the research is completed.

Organizing multiple sources of data in a case study is essential to providing reliability in the research. Yin (2014) promoted a singular, organized collection of all data from a case study that reaches beyond narrative or numeric information and includes documents and other materials collected from the field. The primary purpose of the database is to archive the collected data in an accessible form. Data collected from this study was compiled electronically, with results populated automatically and exported to MS Word and MS Excel. Field notes were then converted daily into organized categories for later access.

The process of analyzing data begins with data gathering, then checking the data for credibility, and finally, reporting the findings of the gathered data. This study employed three data sources: an online questionnaire, semi-structured, face-to-face interviews, and focus groups. Focus groups were used to triangulate the data and establish accuracy, validity, and quality. Data from the questionnaires and interviews were examined, and the data analysis phase included thematic analysis and coding.

Data collection began with the participants' completion of the online questionnaires. After all the questionnaires were submitted, all data were transcribed, coded, and interpreted. Participant responses to the questions were linked to the research questions: 1) "How do middle school teachers perceive their students' digital skills for learning?" and 2) "How do middle school students perceive their digital skills for learning?"

The coding process first defined the unit of analysis—word, sentence, phrase, piece or chunk of information. Secondly, the researcher developed a coding framework and reduced the data to eliminate identical statements. Next, the researcher developed a system of categories using an inductive or deductive procedure. Finally, the researcher assigned data to categories, or coded the data, revising the coding based on the data.

This process included mining through the data to identify common themes, ideas, and groupings, and marking similar items using a color-coded system for easy retrieval and analysis. This method made the data more accessible for identifying patterns and making comparisons, shedding light on the similarities and differences among the collected evidence. NVivo software was utilized to expedite the color-coding and analysis and to populate the raw data automatically. This type of analysis streamlined the organization of the data, making the process more efficient and effective as themes emerged. It also included validating the data findings using multiple sources of data, individuals, theories, or different data collection methods (Hatch, 2002). Each unique data source was examined to find common themes that gave the research conclusions credibility.

Next, the semi-structured, face-to-face interviews were conducted using a set of pre-written questions connected to the research questions, 1) "How do middle school teachers perceive their students' digital skills for learning?" and 2) "How do middle school students perceive their digital skills for learning?" Upon completion of the interviews, all data collected via notes and audio recordings were transcribed, coded, and interpreted. The coding process again defined the unit of analysis—word, sentence, phrase, piece or chunk of information. Secondly, the researcher developed a coding framework and reduced the data to eliminate identical statements. Next, the researcher developed a system of categories using an inductive or

deductive procedure. Finally, the researcher assigned data to categories, or coded the data, revising the coding based on the data.

Finally, teacher participants met in a teacher focus group and students in a student focus group whose purpose was to confirm the participants' perceptions and clarify any questions for the researcher. These meetings allowed the researcher to share data interpretations with the participants and provided a venue to clarify, expand on, or share any additional details and perspectives from the interviews. The coding process described above was implemented at the completion of both focus group meetings.

Limitations of the Research Design

Participants were assured that questionnaires and interviews were anonymous and that confidentiality would be maintained throughout the study. These safeguards hopefully led to truthful responses regarding perceptions of digital literacy. Due to the limited number of participants in this case study, the use of questionnaires based on the work of Spengler (2015) and Purcell et al. (2012) on digital literacy may have been a limitation, as opposed to other research with much larger samples. Selection of the framework of Calvani et al. (2009) may also have been a limitation.

Another possible limitation in this study may have been the implementation of a Likert scale for participants' self-assessment. If respondents were not truthful, this could be a limitation. Participants, basing their assessment of digital literacy on individual perceptions, were not required to demonstrate their digital literacy skills in comparison with their perceived skills, nor were teachers asked to observe their students overtly.

This research was completed in one school semester with no plan for a follow-up study, limiting the time frame for the research. Also, the location of the study, a small rural town in the

Midwest, as well as specific cultural and regional characteristics may not apply to other educational institutions. It is possible, however, that other locations with similar settings and teacher and student demographics may draw similar conclusions.

Validation

Use of multiple sources of data is essential to validate the conclusions of the qualitative research design. Gathering information and multiple sources of data to support inferences is the essence of validation. Solid qualitative research requires rich description along with in-depth interviews and discussions in order to obtain quality data (Harrison, MacGibbon, & Morton, 2001). Consistency and credibility was assured through member checks, close attention to the researcher's reflective commentary, and the triangulation of data. In addition, the analysis included a rich description of the setting, the study's participants, and quotes from questionnaires, interviews, and focus groups.

Credibility

Yin (2014) described four essential principles of data collection to ensure that the research is credible and valid. First was the use of multiple sources of data. The researcher triangulated the data through online questionnaires, interviews and focus groups, assisting in providing high-quality evidence. Second was the creation of a case study database that collected the data and a separate database that compiled and organized the data to include other documents from the research. Data from this study were compiled electronically, with field notes converted daily into a second database and categorized for later access.

Dependability

A third principle of data collection is maintaining a chain of evidence to increase the reliability, or dependability, of the information collected in a case study. The ability to follow

the study's conclusions back to the research questions, then back to the conclusions again will assure that the study possesses high construct validity that will heighten the overall quality of the case study. The researcher took care to process all findings and methodically record all evidence, ensuring no data were lost or left out due to perceived bias.

The fourth principle of data collection is using electronic data sources carefully. Electronic data sources in this study were limited to the results of the anonymous online questionnaires. Results compiled with this electronic information-gathering tool were carefully analyzed and documented in a Qualtrics software program created by the questions and the responses.

Ethical Issues of the Research Design

Each participant signed an informed consent form. Identities will be protected throughout the length of the study and thereafter. Confidentiality was a high priority to ensure participants were and will be free from harm. The online questionnaires were submitted anonymously with the exception that participants identify as a student or a teacher. No real names or locations were identified in the study. Interviews and focus groups were coded to protect the identity of the participant, and all data will be stored in electronic format in password-protected files. All audiotapes will be kept confidential throughout the length of the study and thereafter.

Chapter 3 Summary

This case study sought to understand how students perceive their digital literacy skills and how teachers perceive their students' digital literacy skills. Research challenges the concept that today's students are digitally advanced simply because they were born into a digital world and instead asserts that today's students mainly utilize digital tools for personal use, such as

entertainment and communication (Bennett, 2012; Thompson, 2013). These specific digital skills may not be sufficient to define one as digitally literate. In fact, students seem only comfortable with a limited range of technology tools, with few skills in utilizing technology for collaboration and creating real-world knowledge. These limited skills could indicate that these digital youth are not equally academically skilled with technology essential for learning (Gallardo-Echenique et al., 2015; Gurung & Rutledge, 2014; Kennedy & Fox, 2013; Voogt et al., 2013). The findings of the student and teacher participants' responses in both questionnaires and interviews that follow will point toward a new understanding of middle school self-perception of digital literacy skills and the teachers' perceptions of the same. The goal of this study was to shed light on any evidence that could assist teachers to better meet children where they are in their current digital learning skills and move their learning forward toward authentic digital literacy.

Chapter 4: Data Analysis and Results

Introduction

The purpose of this qualitative study was to explore the perceptions of teachers and students regarding students' digital literacy skills for learning. This study explored the perspectives of seven middle school teachers and seven students in a grade six through eight middle school setting. Teachers varied in grade, subject area, and years of instructional experience. At the time of this study, student participants were all current eighth graders at the middle school.

A significant gap may exist between formal digital literacy skills students possess and the skills they need to be digitally competent. Technology literacy for learning should be as essential for life as it is for the social communication and entertainment on which today's students thrive (Hargattai, 2014; Kirschner & De Bruyckere, 2017). The researcher noted limited research on whether formal and direct exposure to developing digital literacy skills for learning is keeping pace with the demands of a technologically centered society. This study aimed to address the gap in the literature by studying the topic from the teacher's and the student's point of view. Since digital literacy plays an essential and integral role in educating today's students, this study will present information about how teachers and students perceive these digital skills for learning.

The setting for this qualitative study was a public middle school in a rural community located in central Nebraska. This rural middle school has 31 teachers and a high poverty and minority population of just over 350 students. Approximately one-third of the students are identified as ELLs, of which the majority are Hispanic students. Both teacher and student participants were selected utilizing a random, purposeful sampling procedure. Data collection

included an online survey, individual interviews with each participant, and teacher and student focus group discussions. The sample size for the focus group interviews consisted of seven participants in each of the teacher and student groups.

To answer the research questions that framed this study, the researcher utilized a qualitative case study research design. These two research questions directed the data collection process and defined the purpose of the study: how do teachers perceive their students' digital literacy skills as effective for learning, and how do students perceive their digital literacy skills as effective for learning?

Chapter 4 begins with the description of the data sample followed by the data analysis procedure. The chapter also presents the results based on the study's two research questions. The data analysis also utilizes coding themes that align with the digital competence conceptual framework (Calvani et al., 2009).

Description of the Sample

Teachers and students selected for this study were located at one middle school. A random, purposeful sampling procedure (Creswell, 2013) was employed to select the study's participants; the teachers and students selected for the study were not representative of the middle school. The researcher sent an initial email to all teachers and all eighth-grade students in the middle school, inviting them to participate. The first seven teachers to respond and return the teacher participant consent form (Appendix A) were selected. Additionally, the first seven interested eighth-grade students who responded and returned both the parental consent and student assent forms (Appendices B, C, and D) were selected as participants. Since some of the student participants' parents preferred a Spanish version of the parental consent form, a translated form was also provided.

The researcher contacted each participant by meeting with each of them individually after school over five days. The first request was to complete the Qualtrics survey that the researcher arranged to distribute via school email, assuring students that their surveys would be anonymous to ensure truthful and honest answers. The second request was to agree on dates and times for the individual interviews. The individual interview sample size for the teacher group consisted of seven participants, male and female, each representing core, special education, or non-core subject areas. Seven eighth-grade student participants made up the other individual interview sample, comprised of both males and females.

To gather data and address the research questions that directed this study, teacher and student participants completed the online Qualtrics survey, comprised of 16 Likert-scale and open-ended questions designed by the researcher. Although both surveys posed the same questions, the student survey was directed to perceptions of their digital literacy for learning. The other survey was directed to teachers and their perceptions of students' digital literacy for learning. All student and teacher survey responses were collected via the online Qualtrics software, compiling the results in electronic reports for further data analysis in the researcher's password-protected Qualtrics account. Fourteen individual reports were then downloaded, producing 28 double-spaced pages of data for analysis.

Second, to gather data and address the research questions that directed this study, individual interviews were then conducted with each student and teacher participant using the researcher's prepared set of eight interview questions (Appendices G and H). The researcher led each interview in a private room at the middle school in a face-to-face, one-on-one setting with each of the study's participants. After the completion of the individual interviews, the sum of the student and teacher interviews created 29 double-spaced pages of transcript data.

Finally, to gather data and address the research questions that directed this study, the researcher assembled two focus groups, one with six of the teacher participants and one with the seven student participants. One teacher was unable to attend the teacher focus group interview. Each of the group interviews was conducted in a private room at the middle school using a prepared interview guide comprised of five questions each (Appendices I and J). Participants were asked to clarify or expand on any of the questions addressed in the individual interviews. A total of 2 hours of discussion for both groups created 37 pages of transcript data.

Research Methodology and Analysis

All teacher and student participants who were selected completed the online Qualtrics survey, participated in individual interviews, and gathered in their respective focus groups for discussion. All interviews and focus group discussions were recorded and transcribed by the researcher into written transcripts and double-checked for accuracy. Sixteen transcribed interview files (14 individual and two focus groups) were created in Word format. Fourteen Qualtrics surveys were exported in Excel format. Upon assembly of the documents, the researcher sent all survey and transcript data through a secure website at DataSense, LLC for initial coding and data analysis. All files were organized by data type and prepared in Word for importing into the NVivo 12 qualitative software. Each line was read manually and coded to nodes based on data type: survey questions, interview questions, and focus group questions. As coding was refined, a total of 362 subcategory nodes were created in 10 reports: survey questions (1 file with 154 subcategories), interview questions (8 files with 153 subcategories), and focus group questions (1 file with 55 subcategories).

The researcher studied all NVivo reports thoroughly, using personal judgment and context as critical factors in organizing and analyzing the data. The researcher also analyzed text

based on word use, definitions of words, and the researcher's experience and understanding of the words. As coding is a subjective process, it is not exhaustive, and there are many different ways to interpret the data. The researcher relied on personal understanding of the data and context to explore and discover patterns and emerging themes.

As the researcher studied data patterns, two general and preliminary categories emerged: positive and negative perceptions of students' digital literacy skills for learning. Each subcategory, supported by teacher and student comment data and generated by the NVivo 12 software, was evaluated. Data was then sorted into either the positive or negative perception category for each of the teacher and student groups. Tables 1 and 2 illustrate the results for both participant groups. Note that individual student comment tallies are not differentiated due to the intentionally anonymous design of the student survey to ensure honest responses. Table 1 reflects the number of positive to negative comments for the teacher participants and revealed 44 positive perceptions of students' digital literacy skills and 53 negative perceptions. Table 2 presents positive and negative perceptions of students' digital literacy skills and showed 69 positive comments and 18 negative comments.

Table 1

Teacher Perceptions of Students' Digital Literacy

Teacher Participant	Positive Comments	Negative Comments
Teacher 1	10	3
Teacher 2	7	3
Teacher 3	5	10
Teacher 4	3	12
Teacher 5	2	11
Teacher 6	7	7
Teacher 7	10	7
Total	44	53

Table 2

Student Perceptions of Their Digital Literacy

Student Participant (N = 7)	Positive Comments	Negative Comments
Total	69	18

In the next phase of the coding process, the researcher titled and retitled subcategories within the teachers' and students' positive and negative comments and began clustering them together into fewer themes, eliminating any outliers. This cycle of merging the data continued repeatedly in the data analysis process until fewer categories, or themes, became evident. Positive and negative comments were grouped into six broad categories: a) use of digital skills in creative and original ways, b) lack of digital skills for creativity, c) use of digital skills to evaluate and analyze information, d) lack of digital skills for critical thinking, e) use of digital skills in ethical contexts, and f) lack of digital skills in behaving responsibly.

As this development continued, the researcher began synthesizing the meaning of each of the categories and proceeded to merge them until it was clear that three categories, or themes, remained. This third phase of the coding process, defined as "selective" coding, produced new meaning for the research data. The researcher recognized that when considering the digital competence framework (Calvani et al., 2009), three emerging themes aligned consistently with the elements of the framework: a) technological literacy, b) cognitive literacy, and c) ethical literacy.

Convergence of these three literacies defines digital competence. First, the *technological* component of digital competence, or literacy, involves the ability to approach digital contexts in novel and flexible ways (Calvani et al., 2009). A second component, the *cognitive* element, encompasses the ability to critically evaluate digital content by effectively analyzing relevance and reliability of data (Calvani et al., 2009). The third is the *ethical* component, the digital

actions that display responsible attitudes and behavior toward self and others (Calvani et al., 2009). Each of these categories organized the data into relevant and insightful themes that assisted the researcher in answering the research questions regarding teacher and student perceptions of digital literacy for learning. These three predominant themes are described and detailed in the Presentation of the Data and Results section of this chapter.

Presentation of the Data and Results

This section presents the collected and analyzed data of this study, with the results based on the research questions that frame the purpose of the study. These two research questions were addressed and utilized to present the study's findings: 1) how do teachers perceive their students' digital literacy skills as effective for learning, and 2) how do students perceive their digital literacy skills as effective for learning?

To address the research questions and analyze the collected data, the researcher gathered the NVivo 12 data reports generated for all student and teacher participant surveys, interviews, and focus group discussions. Initial results produced 362 subcategory nodes in 10 reports. This open coding phase developed descriptive themes and assigned titles to each category. Specific phrases and keywords were extracted from the content to create each title.

Teacher participant data were analyzed as the researcher developed, clustered, and merged categories into broader themes, eliminating those categories that did not fit. New titles were created, analyzed, and merged again until the basic categories of positive and negative perceptions emerged. This analysis was repeated for the student participant data, generating two broad categories of positive and negative perceptions. The creation of two parent codes, positive and negative perceptions, allowed for further analysis of the data in both participant groups.

Child codes, or subcategories, that fit under each parent code were then re-categorized, generating subthemes under the positive and negative perceptions categories. The researcher's coding analysis of the teacher and student participant data from the survey results and the transcribed individual and focus interviews yielded several themes: a) use of digital skills in creative and original ways, b) lack of digital skills for creativity, c) use of digital skills to evaluate and analyze information, d) lack of digital skills for critical thinking, e) use of digital skills in ethical contexts, and f) lack of digital skills in behaving responsibly. These categories were clustered and merged again, creating three prominent themes that together define digital competence: 1) perceptions of students' technological literacy, 2) perceptions of students' cognitive literacy, and 3) perceptions of students' ethical literacy. Finally, the researcher merged the data into these emergent themes: 1) creativity, 2) critical thinking, and 3) choices. Each of these categorical themes is explored and illustrated in the following section.

Creativity in digital contexts. The first theme under the parent code of perceptions was the child code labeled creativity in digital contexts. This technological component of digital competence, or literacy, encompasses the ability to approach digital contexts in novel and flexible ways (Calvani et al., 2009). In this way, the student strives to create and share new knowledge utilizing a variety of digital tools and resources. In this study, however, when teacher participants were asked how students communicate ideas in creative and interesting ways online, their responses were mixed as illustrated in Table 3.

Table 3

Teacher Comments on Creativity in Digital Contexts

Magnitude coding	Teacher comments [sic]*
Positive (supports student as creator)	• I see them creating projects for school utilizing video creation. • My kids write [everyday] [on line] using a journal, and they do a great job with their expression. • I see them creating multi-media projects including pictures and video. • We use [padlet] in the classroom for students to communicate. We sometimes even do it as a back channel.
Negative (supports student as consumer)	• I see games mostly being played, not using it to be creative and inventive. • I do not observe a lot of creativity. I observe a lot of game playing.
Mixed (combination)	• Some of the students use the iPad for creative presentation projects, but I don't think they have enough exposure to the picture editing, graphic arts. • I blame myself for that. I don't have the background. Middle school is good for that and a lot of young teachers or teachers who have a wider background than I do. • I think they need to be curious…to want to know. I hope there are still creative people out there that are just going to make these things happen, but not my students. I just don't see them doing that.

**Note*. Comments are shown as submitted with spelling and grammar mistakes intact.

When asked how they see students using technology every day, the teachers' most common responses were classwork, research, and note-taking. Teacher participants also listed student use of assigned websites for skills practice, test review, research, and accessing core curriculum content. Teacher 1 said,

> In my classroom, I see them use DE techbook [which] is a book that is all online. And they do readings from there, they take quizzes from there, they will do projects from there. They also will use Quizlet to help study for tests. We do the bell ringers sometimes we'll use Padlet for bell ringers and so forth. And we also do a number of things through Google, we take our tests with Google, we complete projects using Google slides, so that's how I know they're using technology every day.

Another teacher participant observed students' lack of skills in pursuing deeper answers and creating new knowledge. Teacher 6 commented,

> And then on a personal level, they're using their phones just to glean information all the time, where it used to be that we used to say, "well I wonder," now it takes six seconds to find out, "well now I know." So sometimes that sense of wonder's lost because they don't have to wait to find out an answer, or they don't really have to dig super deep to learn how to research. They can find it super fast, which can be good. I mean, and it is good in certain realms, but also I think it can kind of hinder that sense of the grit in needing to really dig into something a little bit more deeply.

Teacher 4 mentioned observing other personal behaviors of students' use of technology at school. "Text messaging, you know, I'll see them like in the mornings and stuff, and I just know without seeing that they're using Snapchat and Facebook and different things like that." Still another teacher described what they see students do outside the school day, saying, "Outside the classroom, YouTube a lot…sometimes taking pictures of each other, filming each other."

Teacher planning, intentionality, and guidance may be important elements in fostering students' creativity in digital contexts. Some teacher participants believed students' creativity depended on the purposeful planning of the classroom teacher. Teacher 6 stated,

> I think it comes down to how a classroom is structured or how students have been shown the importance of using technology for learning. Again, the intentionality of it, what is the purpose behind using this versus doing this, and them seeing value in using technology versus not.

Another comment by Teacher 6 underscored the role of the teacher and described it further,

It really goes back to the adult leader of the intentionality of how we're using this, and then are the kids who maybe are a little bit more mature or just a little more adventurous, how are they using it to go teach themselves?

Although teachers described some creative ways students use technology during the school day, several students admitted that their personal choices to express their creativity online were by using social apps outside the school day. Student participant responses follow in Table 4.

Table 4

Student Comments on Creativity in Digital Contexts

Magnitude coding	Student comments [sic]*
Positive (supports student as creator)	• Write about it, read ideas, talk about them together • I post projects online. • I share some projects with my classmates. • I used Minecraft and I created something I wanted to show. While I presented my project, I gave other students ideas that they might use. • You can change it, [like] make it different. You can't do that on a piece of paper. • In Reading, I use Google Docs to write our essays so we can send them to our [high school] teachers or sometimes [you] write different questions we can ask other students and make [like] our different type of research, which is [kinda] fun. • In school I use it to make presentations for classes, mostly in Science to present models and different [type] of things we learn in that class
Negative (supports student as consumer)	• I share my ideas through online private chats. • I mostly use Snapchat to connect with my friends • Just texting some friends • I use social media. I use it to communicate with other people • Just [watching] some videos and play games • I just watch YouTube and Netflix mostly.
Mixed (combination)	• I share it with others, I usually post it on [instagram] or something like that.

**Note*. Comments are shown as submitted with spelling and grammar mistakes intact.

Other student participants mentioned the value of peer communication and collaboration in the school environment when approaching problems in new and creative digital contexts. Recalling a class project and the task of designing an original app, Student 6 explained,

> The skill you need to have is communication. That's the main key in computer literacy, 'cause say you make an error and you don't find anything. The person sitting next to you can help you. Because just one error can like bring down the whole entire app, 'cause I had that happen to me. Yeah, it was a disaster until one of my friends next to me helped me, and she's like, "oh yeah, you just missed a letter right there." So, yeah, communication is a key thing in digital literacy.

Another student echoed the importance in collaborating and viewing problems in new and flexible ways by stating that a person who is technologically literate "should have the skill to help other people [like] who need help on certain things." This student view suggests that teachers who create well-designed, collaborative student environments that promote communication among peers in the classroom can foster creativity and encourage students to become creators in digital contexts.

Critical thinking in digital contexts. The second theme under the parent code of perceptions was the child code labeled critical thinking in digital contexts. This *cognitive* component of digital competence, or literacy, centers on the ability to critically evaluate digital text and data with the ability to analyze relevance and reliability (Calvani et al., 2009). In this way, the student critically compares a variety of data sources to reach valid conclusions about digital information. Teacher participants in this study described their perceptions of students' digital skills in analyzing and evaluating data as outlined in Table 5.

Table 5

Teacher Comments on Critical Thinking in Digital Contexts

Magnitude coding	Teacher comments [sic]*
Positive	• I can sit and watch kids who have grown up around computers, who have grown up with a phone in their hands, and how they are doing creation processes and kind of their deeper thinking skills. • They know how to search. • They know how to use, I mean, it goes back, silly, but Boolean [features], you know, just that basic thing. • The skill level overall now compared to where it was five years ago versus now is different. Just more exposure to intentional use of technology, intentional use of what they're doing in school rather than "here's something, let's see what you can do with it."
Negative	• They seem to believe everything they read is true. • I see a lot of students who take the information at face value instead of searching out to make sure information is accurate. • The younger the student, the less interested in validated resources. • Too many look for shortcuts or tend to believe the first site they find. • Do they know if a site is a good site, or if, you know, do we just believe everything that we read and see? Probably not so much. • The one that I would say they probably lack the most…the ability to go to a variety of different websites, not just take one as the gospel truth. • I don't know if they read so much, the media. And then interpret media, the images, tell me what that means…they still have a difficult time.
Mixed (combination)	• I can tell the kids who've been through a [digital literacy] class when they come to me second semester versus the kids who have not. Just with their ability to vocalize and to speak in digital terms. • A lot of my students start out the year by thinking anything in print is the truth. We try to talk about trustworthy sites, etc., throughout the year. • When given guidelines, students tend to do better in making decisions about information. They tend to "forget" when not reminded or guided. • Many of my students may take the time to find things online but have difficulty [of] understanding, writing, knowing if the information is correct or how to use it for their own work.

**Note*. Comments are shown as submitted with spelling and grammar mistakes intact.

Teachers also raised concerns about students' abilities to evaluate and analyze the digital sources that constantly compete for their attention. Teacher 4 stated,

> I just don't think they quite grasp the bigger picture. I just don't. Like, like the fake news. That's huge. I don't think students really, really get that you have to investigate. You can't take everything at face value. What's true and what's not. And I think there's still a lot to learn for these students.

Teacher 1 echoed similar concerns when he said,

> I think it's also important that students understand the bias our media plays. It seems like the mainstream media only wants you to hear one side of the story, and I think that more and more Americans are believing just the one side of the story and not even questioning the other side of the story anymore. And so, it's not really news anymore because all they're doing is presenting one side of the story.

Intentionally promoting and practicing critical thinking skills in digital contexts with students is essential as Teacher 4 explained,

> We've just got to get our students to ask the questions. I mean, ask the questions. So really, you think there's only one side? What if? Let's play the what-if game. What if there really is another side and we're only believing this?

In addition to the skills of recognizing and identifying bias, other teacher participants expressed the importance of a purposeful sense of skepticism when evaluating information in digital contexts. Teacher 7 stated that students "definitely have to have a sense of, you know, what's a valid source and what's an invalid source…knowing what sources to go to." Teacher 1 added, "They should be able to look at information and be able to tell whether the information is reliable." Teacher 6 also emphasized the need for the intentional role of the teacher,

> Because, you know, well I've read this or I saw this, and there needs to be just a little bit of skepticism of "have you considered or have you thought about" that, especially when

you can have those discussions at the eighth grade and high school level, and possibly younger.

Other concerns voiced by teacher participants were their perceptions of students' abilities to analyze and synthesize digital information. Teacher 4 described how students "have to be able to put things into their own words, put ideas and thoughts into their own words. And it's gotta make sense. You've got to be able to summarize, put things in the right order, scaffold it." In a digital world where information, accurate or not, is a constant and unending flood, students need guidance to control the deluge, manage the data and make sense of it. Teacher 6 emphasized this when she stated,

> You [students] absolutely have got to understand, be able to process, problem solve, kind of think outside the box for the world they're in. So really being able to take something and to apply it and to create something new and to figure out "where do I go to find this information? Now what am I going to do with it?" Just absolutely essential and every job they're going to do…it's here, it's here.

Although teachers expressed serious concerns about students' competence in using critical thinking skills in digital contexts, the student responses appeared much more confident. Their participant responses follow in Table 6.

Table 6

Student Comments on Critical Thinking in Digital Contexts

Magnitude coding	Student comments [sic]*
Positive	• I usually check the sources, because [their] [is] a lot of faulty websites. • I also judge by its reliability. I have to be able to trust the information given to me. • Try to find as much content and review it to see if true. • I judge the quality of online information by its accuracy. • Online information has to have updated details and facts that are true. • If [it] uses correct grammar and spelling. • Know how to search things, how to find the author of web pages, when it was published…all the important stuff
Negative	• I judge based upon how descriptive online information is. • The popularity of the site • If a lot of other people have used it
Mixed (combination)	• Check first by seeing if there is a lock right by the URL, this will let you know this site is verified.

**Note*. Comments are shown as submitted with spelling and grammar mistakes intact.

Only one student defined a digitally literate person as one who can conduct research and judge the quality and reliability of the information found online. All student participants described themselves as skilled and successful digital users in classroom learning environments, although some acknowledged that because technology is changing all the time, they had room to improve. Regarding their current digital skills for learning, Student 7 said, "They're not the best," and Student 2 echoed that there is "still a lot to learn." These teachers' and students' perceptions seem to suggest that although both groups agree that technology is continuously evolving and changing, they do not share the same sense of urgency and need to be able to think critically in digital contexts.

Choices in digital contexts. The third theme under the parent code of perceptions was the child code labeled choices in digital contexts. This *ethical* component of digital competence, or literacy, encompasses the ability to productively interact with others using technology in

responsible ways (Calvani et al., 2009). A student possessing ethical competence makes digital choices based on respect and responsibility for self and others, including protecting personal information, respecting others and their opinions online, and following digital and copyright laws. Table 7 outlines how teacher participants in this study perceived students' digital skills in making ethical choices.

Table 7

Teacher Comments on Choices in Digital Contexts

Magnitude coding	Teacher comments [sic]*
Positive	• I think they do a very good job knowing what to do and how to use the information and then how to cite the information appropriately. • They will usually ask teachers, especially me, if it has to be cited and so forth, so they know that information needs to be cited. • Students will leave a site once they encounter something that is inappropriate. Most students then will report it to me if they found something that was inappropriate.
Negative	• I think they tend to take more risks when in a group of teens. • I still know some students will still try to find things that they should not be looking for. • I know students will check mail and go to other sites while the teacher is instructing and then go quickly back when the teacher walks around. • I notice that students are spending a lot of time on YouTube and searching inappropriate lyrics or watching how to play certain video games. • I don't observe a lot of responsible behavior from my students. • Copyright infractions are constant. • I think they don't really understand the privacy issues. • Like most kids, they think they can get away with it. • I think they think it is okay unless you get caught. • They think it's funny to [videotape] us teachers or to take pictures of us as teachers. And they just, they don't understand the damage that that could do 'cause all somebody has to do is doctor that photo, and that could be our livelihood. • Their biggest problem is just staying focused and on track and not to be lured to other sites. I think that seems to be our biggest problem. • We talk about integrity all the time. It's like "can I trust you to be, stay on this site and not be flipping back and forth?" That probably has been my biggest headache all year.
Mixed (combination)	• I believe they know [privacy issues] but the majority of them don't think these issues will ever [effect] them. • While they have been taught in a variety of classes and by a variety of teachers throughout middle school and high school, many students still seem to ignore privacy issues.

**Note*. Comments are shown as submitted with spelling and grammar mistakes intact.

Some of the teacher participants mentioned that students realize that their digital access is filtered at school, which limits their online choices during the day. One teacher mentioned an app that allows the teacher to monitor student screens during instruction. "I have Apple Classroom," Teacher 2 stated, "and the filters in the school system control a lot of that." Noting that certain categories of websites and apps are blocked for students on the school's network, including social media, Teacher 3 said, "In school they are not allowed on Facebook or social media sites, so I don't see them misusing these media forms." Website filtering at the middle school may not, however, be revealing the full picture about how students are making digital choices. Teacher 5 acknowledged, "Many students know that the tech department monitors where they go online," while Teacher 7 added, "but at home I feel the door is wide open."

Students' digital choices differ when they are using their personal devices and wireless networks compared to their behaviors on a well-monitored, limited access school network. Teacher 7 continued,

> When they're at home, it's you know, it's all the video games and it's just like they get that all in their [head] and it's, so it's hard to flip over when they get to school. I don't know, it's a, it's a battle, it really is.

Teacher 6 also expressed alarm about students' digital choices outside of school when she said, "I think they tend to take more risks when at home on their own."

Whether students understand the risks and ignore them, or whether students just don't expect anything negative to happen, teachers were wary and voiced their concerns. Teacher 5 described how students seem to believe "it's safe because it's digital. It's not face-to-face, feelings are involved." Teacher 7 added, "When they don't have to go face-to-face, [you] can be very mean."

Teachers also expressed unease about personal privacy and issues of online misrepresentation. Teacher 7 said, "You put something out there, it's out there. You can't get rid of it." Teacher 5 took it a step further when she mentioned, "because someday you're going to want to get a job, and they see all these pictures of you drinking." Teacher 3 interjected, "and it might be somebody else." The mention of online misrepresentation sparked another comment. Teacher 6 described a potential issue as "a situation that your name gets tied to [something] that you had nothing to do with because so-and-so said it was you."

Table 8

Student Comments on Choices in Digital Contexts

Magnitude coding	Student comments [sic]*
Positive	• I show responsible behavior online by not spreading hate. • I also show responsible behavior by protecting my privacy. • I never say bad things online. • I show responsible behavior online by respecting other people online. • [Respecting] not just people, but also their work. • By not taking [other's] work or plagiarizing • Controlling [on] what I post online • Not talking behind the computer screen • Following the [communities] [guidelines] • Don't post it if you wouldn't say it • Don't show people your password or share your location
Negative	• I like private digital [communication] because maybe you need something private from a person • People communicate with other people they don't know in real life, but they know each other online and you never know who's behind the screen. • I don't usually find the author, the dates. I just read it.
Mixed (combination)	• From what I understand, privacy issues are getting bigger and more complex nowadays. • People post pictures of themselves, how they feel, what they like and so on. • People can know [were] you are every second • I don't always dig through stuff to make sure that it's like all true.

**Note*. Comments are shown as submitted with spelling and grammar mistakes intact.

Despite real concerns voiced by teacher participants and their perceptions of students' choices in digital contexts, the student participants' answers created a different tone. Even though the student responses reflected an awareness of the possible negative implications of their online choices, they also communicated a sense of confidence in their abilities to control their digital behaviors. Table 8 illustrates the student participant responses.

None of the student participants mentioned or described any poor choices or adverse situations they had encountered online. Instead, most chose to describe how others might get into trouble in digital situations, separate from their own behaviors. Student 7 said,

> I mean, you could use it in [like] dangerous ways, but I think in this school we can use it [like] for learning. I think it's [my ability to make choices] pretty good. They teach us what to do [like] right and not anything dangerous.

Student 3 explained that a person who does not understand the importance of good digital choices "might share some information that people would use to [like] copy your identity or try to rob you or other stuff like that." Conversely, he described his online actions as, "mostly safe, that I'm able to take care of my privacy and not tell others about things that they shouldn't know."

Chapter 4 Summary

The purpose of this qualitative study was to explore the perceptions of teachers and students regarding students' digital literacy skills for learning. This chapter summarized the findings as they related to the research questions. Data collection included an online survey, individual interviews, and both teacher and student focus groups. A sample size of 14 participants, seven teachers and seven students, was utilized in the study. The researcher

analyzed the data using the NVivo 12 software and created parent and child codes to organize the information gleaned in the collection process.

Three main themes, or categories, emerged after the collection of data and subsequent analysis. Using the digital competence conceptual framework (Calvani et al., 2009), these three elements together define digital competence: (a) technological literacy, (b) cognitive literacy, and (c) ethical literacy. The researcher then merged the data into these emergent themes: (a) creativity, (b) critical thinking, and (c) choices. Each of the themes aligned with the research questions of the study: how do teachers perceive their students' digital literacy skills as effective for learning, and how do students perceive their digital literacy skills as effective for learning?

The results indicated that perceptions varied between teachers and students in ways that may impact the student as creator versus consumer in the learning environment. This comprised Theme 1: Creativity in Digital Contexts. Similar results showed variations on how teachers and students perceived students' abilities to use cognitive skills to evaluate and analyze data and information online effectively. These results encompassed Theme 2: Critical Thinking in Digital Contexts. Finally, the perceptions of teachers and students starkly differed in how they understood the potential long-term impact of online behaviors, summarized in Theme 3: Choices in Digital Contexts.

Chapter 5: Summary, Conclusions, and Recommendations

Introduction

There is no doubt that today's learners are confident, positive, and comfortable in their ability to use technology in their everyday lives, yet their digital skills for learning may be superficial at best. Technology literacy for learning should be as necessary for life as it is for the social interaction and entertainment on which today's students thrive (Hargattai, 2014; Kirschner & De Bruyckere, 2017). Although digital competence is essential, there is limited research on whether formal and direct exposure to developing digital literacy skills for learning is keeping up with the demands of a technology-centered world.

According to the literature, little emphasis has focused on teacher and student perceptions of students' digital literacy skills for learning, yet more attention to this topic is warranted (Gallardo-Echenique et al., 2015). Today's learners' shallow digital skills are not sufficient to define them as digitally literate (Gurung & Rutledge, 2014; Kennedy & Fox, 2013). Schools are also struggling to keep pace with new digital technologies while simultaneously attempting to provide the essential content and skills that students will need for lifelong success (Ascione, 2017). The purpose of this qualitative study was to explore teachers' and students' perceptions of digital literacy, summarize the data, reach conclusions, and offer recommendations based on the findings. The researcher strived to answer the study's two research questions: how do teachers perceive their students' digital literacy skills as effective for learning, and how do students perceive their digital skills as effective for learning?

This study is vital to the field of education because digital literacy issues are timely and relevant for adequately preparing today's students for lifelong success in a technology-centered world. Identifying potential differences in teacher and student perceptions can inform and direct

future decisions in working with students to become digitally literate. This study also adds to the body of knowledge needed to understand the digital literacy skills that today's students need for learning. In addition, it raises awareness of the importance of designing and implementing deliberate steps to ensure all students have the skills to succeed in a technology-centered world.

The focus of this chapter is a discussion of the study's findings in the context of the current and known literature about teacher and student perceptions of digital literacy. The discussion concentrates on the findings as they contribute to the current literature and the academic field. This chapter also contains the conclusion of the study and how these conclusions can inform and improve curriculum and educational practice to ensure that students are equipped with the essential digital literacy skills for learning. The researcher addresses both practical and future implications, the study's limitations, and recommendations for future research on the subject of digital literacy skills for learning.

Summary of the Study

According to the literature, today's students primarily utilize digital tools for personal use, such as communication and entertainment yet questions remain about whether students are digitally competent simply because they are confident and comfortable with technology (Hargattai, 2014; Kirschner & De Bruyckere, 2017). Although students possess some digital skills, they may be lacking critical skills in utilizing technology for learning, collaborating, and creating new knowledge (Gallardo-Echenique et al., 2015; Gurung & Rutledge, 2014; Kennedy & Fox, 2013; Voogt et al., 2013). The goal of this study was to explore teachers' perceptions of student digital skills for learning and students' perceptions of their digital skills for learning to assist teachers in moving students toward authentic digital competence. The data and findings from the results of the study provided the researcher with valuable insight and understanding

about elements of digital competence that may require more intentional and purposeful focus by teachers in developing digitally literate students.

Utilizing the Digital Competence Framework (Calvani et al., 2009), the researcher analyzed teacher and student perceptions based on the framework's three overlapping elements: technological literacy, cognitive literacy, and ethical literacy. The first dimension, technological literacy, encompasses the ability to approach digital contexts in new and creative ways. Second, cognitive literacy involves critical evaluation and analysis of digital information to determine relevance and reliability. The third dimension is ethical literacy, the ability to interact productively with others in respectful and responsible ways. Digital competence, or integrated literacy, is defined as the center where all three dimensions overlap and where the power of technology is realized to work with others to build new knowledge (Li & Ranieri, 2010). In this study, the researcher closely examined teacher and student perceptions to identify any evidence of the three elements of the framework.

This qualitative case study gathered data from two participant groups, teachers and students, through surveys, individual interviews, and two focus groups. The sample size consisted of 14 participants, seven teachers and seven students. To analyze the data, the researcher utilized the coding reports generated from NVivo 12 qualitative software. The resulting open codes allowed the researcher to organize and categorize the responses from the teachers and the students. Parent codes were then created to group the responses into two broad themes, positive and negative perceptions. Upon further analysis, the researcher discovered three emergent themes that correlated directly to the digital competence framework: 1) creativity, 2) critical thinking, and 3) choices. All of these themes aligned with the research questions of the study: how do teachers perceive students' digital literacy skills as effective for learning, and

how do students perceive their digital literacy skills as effective for learning? This chapter presents each emergent theme by considering the existing literature on students' digital literacy for learning. The researcher then discusses the impact of the findings in relation to current instructional practice, followed by recommendations for a more intentional focus in creating digitally competent learners.

Summary of Findings and Conclusion

Because of the essential role technology plays in today's world, educational institutions frequently assume that their students possess the essential digital skills required for learning, but upon closer examination, it is clear that students' technology skills vary and may be insufficient (Voogt et al., 2013). There is little awareness and understanding concerning teachers' and students' perceptions of digital literacy skills for learning and how those perceptions can positively inform and impact educational practice in the future. The research regarding digital competence has mainly centered on the essential skills necessary to determine one's authentic digital literacy for learning (Calvani et al., 2009), yet understanding how teachers and students perceive these vital skills is limited. To address the insufficient research information about teacher and student perceptions of digital literacy, the researcher collected data and compared the findings to the three elements of Calvani et al.'s (2009) digital competence framework: technological literacy, cognitive literacy, and ethical literacy.

Perceptions of teachers and students about digital literacy skills. Through the coding process, teachers' and students' positive and negative perceptions emerged. These perceptions were then categorized into three thematic categories. These themes addressed the two research questions: 1) how do teachers perceive their students' digital literacy skills as effective for

learning, and 2) how do students perceive their digital literacy skills as effective for learning? The following sections detail each of the three thematic categories.

Thematic category 1: Creativity in digital contexts. The technological element of digital competence, or literacy, involves the ability to use technology and digital contexts in new and creative ways (Calvani et al., 2009). Utilizing a variety of digital tools and resources, the student creates and shares new knowledge in original and novel ways, creating unlimited opportunities to address and solve real-world issues. According to Runco et al. (2017), creative skills are increasingly valued and highly sought by employers, in part because innovation requires creativity to provide a competitive advantage, and in part, because today's technology-centered economy greatly depends on jobs that require creativity. In addition to creativity, the other highly valued "soft skill" that employers seek in their employees today is collaboration. Today's jobs require that employees are successful at working in collaborative team settings that encourage creativity, consider diverse viewpoints, and solve real-world problems (Greenberg & Nilssen, 2014). Creativity and collaboration are vital to realizing technological literacy.

Teacher perceptions. Teacher participants in the study had mixed responses regarding creativity in digital contexts. Most of the positive perceptions involved writing in journals and creating multimedia presentations in class, yet none of the teachers mentioned intentional planning for working collaboratively or sharing students' work to reach a wider audience. One teacher did acknowledge that simply handing students digital devices was not enough to encourage creativity. She noted that purposeful planning and guidance of the classroom teacher was essential to capitalizing on the potential of technology to impact student learning. Other teacher participants stated they had observed students creating digital projects for other classes,

implying they were not the designers of new and original opportunities for their students to demonstrate curricular concepts for deeper learning.

In addition to well-planned, intentional opportunities for creativity in learning contexts, teachers also need to provide students with classroom activities that grow and refine their abilities to collaborate with others. Collaboration, however, is often mistaken for cooperation, yet they are not synonymous. Classroom teachers most often emphasize cooperation, where students are encouraged to get along, accept others, and display polite behaviors. According to Greenberg and Nilssen (2014), collaboration is much more complex, requiring students to learn to listen to diverse viewpoints and work toward team goals. Providing activities that push learners and teachers out of their comfort zones refines students' abilities to disagree, debate the issues, and reach consensus. Based on teacher responses in this study, these open-ended, difficult to evaluate and measure opportunities for collaboration are notably absent. This void of collective activities could be due to teachers' unfamiliarity with facilitating collaborative learning, or it could simply be due to the demands of covering an exhaustive list of curricular standards.

Three of seven (43%) teacher participants in the study had negative perceptions about students' creativity in digital contexts. When asked how they observed students using technology in new and interesting ways, a few stated that they did not observe students interacting with digital devices in any creative or inventive ways. Instead, they perceived that students utilized technology mainly for playing games. Another teacher admitted that she blamed herself for not giving students classroom opportunities to be digitally creative because she felt she did not have the background.

Student perceptions. Student participants in the study listed writing essays, creating multimedia presentations, and sharing them with teachers and classmates as ways they used digital tools for creativity at school. One of seven (14%) students described how she created a digital project, presented it to the class, shared ideas with other students to use in their projects, and posted it to an online audience. However, more than half of the student participants, four of seven (57%), did not describe their creativity in learning contexts at all. Instead, they stated they were most creative online outside of school, using social apps like Snapchat and Instagram to communicate their ideas in new and interesting ways. Researchers contend that digital literacy should be as essential for life as it is for the social communication and entertainment on which today's students thrive (Hargattai, 2014; Kirschner & De Bruyckere, 2017). Based on the student responses, social apps are popular platforms that, given a choice, today's learners gravitate to naturally outside of the learning environment. Although school policies and Internet filters that block social media apps may prevent students from utilizing these popular digital platforms for learning in the classroom, serious and legal concerns about student safety must come first. The issue for teachers is how to exploit the social media platform concept in designing classroom activities that students will eagerly want to use for learning.

Creativity in today's world also depends on the ability of students to collaborate successfully with others, yet this is not an innate trait. Typical K-12 schools that are based on students working on their own to succeed is counterproductive to teaching them to collaborate. Ironically, however, when students graduate and apply for jobs, they are expected to know how to work with other people (Hancox, as cited in Greenberg & Nilssen, 2014). Based on the student participants' responses in this study, collaboration in digital contexts for learning was rarely mentioned.

Only one student described struggling to solve a problem in a computer programming class, stating that it was not until her partner pointed out the error that she realized her mistake. The student emphasized that communication and working together to solve problems was key to digital literacy. Another student slightly alluded to the concept of collaboration by stating that a digitally literate person should have the skills necessary to help other people, but five of seven (71%) students responded that their interactions with others centered on texting and communicating with peers outside of school. Based on these findings, the majority of these students may lack exposure to and awareness of collaborative learning opportunities in the classroom. This lack of exposure may explain why most of them did not describe working with others as part of their ability to display creativity in digital contexts.

Thematic category 2: Critical thinking in digital contexts. The cognitive element of digital competence, or literacy, encompasses the skill of critically evaluating digital information with the ability to analyze their relevance and reliability (Calvani et al., 2009). Individuals who carefully consider digital sources and critically compare and contrast data to reach valid conclusions demonstrate cognitive digital literacy. A recent study by Robb (2017), however, indicated a genuine concern regarding today's learners' abilities to use critical thinking skills in digital contexts. Results of the study showed that students struggled with deciphering fake online news stories from real ones, and many students admitted sharing a story online that they later learned was inaccurate or false (Robb, 2017). In another study, teachers observed that students had difficulty applying critical thinking skills to discriminate among multiple sources of information and doubted the learners' abilities to judge and select digital content accurately (Ballano et al., 2014).

Teacher perceptions. The majority of educator participants in this study perceived students' abilities to use search terms effectively as either "good" or "very good," with only one teacher perceiving students' online searching skills as "fair." One teacher participant mentioned that she observed students using Boolean connectors along with keywords to narrow online searches, yet she also stated that other students she observed didn't have the exposure to learning and acquiring searching skills and as a result struggled with the basics.

Turkle (2015) questioned whether these instantaneous online search results for information teach students to critically evaluate the information, organize their ideas, and reach conclusions. Teacher participants had mixed perceptions of students' abilities to compile and synthesize information from a variety of sources. Four of seven (57%) rated students' abilities in utilizing multiple sources as "very good" or "good." Three (43%) of the teacher participants rated students as "fair." One teacher stated that one of the digital literacy skills students lack the most is taking the time to seek out a variety of sources and to consider different websites instead of taking the first result and assuming it is reliable.

Teacher perceptions of students' abilities to recognize bias in digital contexts fared worse. Only three teachers rated students as "good" in detecting bias, with over half (57%) rating students "fair" or "poor." The advent of fake news in the media has complicated this issue. According to Robb (2017), a recent survey of today's youth revealed that only a quarter of students put much trust in information from online news sources. As a result, they most often trust family members and teachers as legitimate sources, followed closely by social media such as Facebook and YouTube (Robb, 2017). Without teachers' intentional focus on critical thinking skills, students seeking reliable information on popular social media and video websites like Facebook and YouTube may find themselves unknowingly subject to bias and propaganda.

Rubenstein (2017) warned of the compelling influence online media has on today's students and cautioned that these popular sources could become dangerous and risky venues of truth-seeking.

Identifying bias requires critical thinking skills—comparing multiple sources, understanding diverse points of view, and interpreting the results. One teacher expressed concern about her students' abilities to interpret and critically evaluate online information because reading is a real challenge for them. She stated that even with the extra effort required to read online media, interpreting the words and the images is often difficult. The fact that a significant number of the students are also learning English as a second language added to the teacher's challenges.

The nature of screen-based technologies also hinders reading comprehension, even for the students who are proficient readers. Today's learners tend to jump back and forth with digital text on the screen, choosing to click or not to click, jumping to the next topic, unaware of its value and without rhyme or reason (De Bruyckere et al., 2015). For students who struggle with reading and comprehension, this is a serious and significant challenge. Unfortunately, however, the rapid task-switching behaviors of today's digital learners are influencing how all students choose to read.

Teacher perceptions of students' abilities to judge the quality of online information presented the most concern. Most teachers stated their students routinely looked for shortcuts or latched onto the first site they found, taking little or no time to analyze the reliability of the information or verify the content on other sites. One teacher perceived that younger students showed less interest in validating sources than high school students, perhaps because the research process is a more significant part of high school curricula; still, she observed that even high schoolers needed guidance and parameters for locating reliable and trustworthy information.

The majority of teachers also perceived that students lack the critical thinking skills necessary to adequately judge and verify online sources, often choosing not to spend the time to ensure the information as trustworthy and reliable. According to Thompson (2013), technology in the classroom should not be viewed as capable of influencing students to the point that it replaces the teacher's role. Some teacher participants in this research study articulated the need to provide students with intentional guidance and direction in making sound judgments about digital sources of information.

Student perceptions. Student participants responded confidently regarding their abilities to use online search terms effectively, with all seven rating themselves "good," "very good," or "excellent." One student described a digitally literate person as one who "should know how to search things," and another stated, "I think I can find [stuff] pretty well." The perception that students already have a mastery of locating relevant online information may lull teachers into looking past teaching advanced search strategies with students. Students had similar perceptions when asked to rate their abilities to use multiple online sources. All participants rated themselves "good," "very good," or "excellent," indicating their skills were adequate when tasked with synthesizing several online information sources.

Media bias and fake news, prevalent issues in today's digital world, have made today's students skeptical, choosing to rely most often on family members and teachers for the "truth," and using social media as another popular source (Robb, 2017). Based on this study, student participants' perceptions about their ability to recognize bias in digital media were mainly positive. Six of seven students (86%) responded "good" or very good," with one student who described his skills as "fair." Only one student stated that a digitally literate person should know how to determine the author of a web page, but not one student mentioned the need to consider

issues of bias or the author's perspective in judging whether to trust an online source. This finding may indicate a need for teachers to be more intentional in helping students develop these deeper critical thinking skills in digital contexts. Students who can detect bias by analyzing the perspectives and motivations of others will more confidently make critical and valid decisions based not on others' opinions, but on reasoned conclusions.

Student perceptions about the ability to determine the quality and accuracy of online information were mixed. Six of seven students (86%) perceived their abilities as either "very good" or "excellent," with only one student perceiving those skills as "fair." Highly confident in their abilities, several students indicated that they knew what to look for in locating trustworthy online sources. Some students acknowledged the importance of checking the site's sources because of the prevalence of errant websites. Another student described how it was important to judge online content by whether the information was reliable, emphasizing the need to be able to trust the presented information. Other students stated that they judged online content by locating evidence of updated and current information as well as the use of correct spelling and grammar.

Other student responses reflected a lack of skills in judging online content for relevance and reliability. One student noted that he judged digital content more highly when the information was descriptive, while other students responded that they judged online information based on the "popularity of the site" or "if a lot of other people have used it." None of the students mentioned how to analyze web site addresses to judge online sources, such as ".edu" and ".gov" over ".com" and ".net" and the evidence of other symbols that may indicate a personal website. The disparity in students' perceptions about how to determine whether online information is trustworthy or not highlights the urgent need for educators to address these critical thinking skills in digital contexts.

Thematic category 3: Choices in digital contexts. The ethical element of digital competence, or literacy, consists of the ability to productively interact with others using technology in responsible ways (Calvani et al., 2009). Ethical digital competence encompasses behaviors that demonstrate the active, moral awareness of the impact of digital actions on self and others. In a research study utilizing Calvani et al.'s (2009) digital competence framework to assess ninth grade students' technology skills, Li and Ranieri (2010) discovered that students' ethical behaviors fared worse than the students' overall technological and cognitive competencies. Research conducted by Ballano et al. (2014) also found that teacher participants viewed their students' ethical literacy skills as weak when utilizing digital content, specifically questioning their students' ability to understand and respect intellectual property. The frequent use and prevalence of students' "cut and paste" behaviors also contributed to the teachers' concerns about students' ethical choices (Ballano et al., 2014).

Teacher perceptions. When asked what they observed about how their students demonstrated responsible behavior online, teacher participants' perceptions were overwhelmingly negative. Two of seven (29%) teachers stated their students acted responsibly with digital content in their respective classrooms; one teacher mentioned that in his class when conducting online research, students often inquired whether a source required citation. The same teacher participant reported that most students behaved responsibly by self-reporting unintended encounters with inappropriate websites. Most of the teachers, however, perceived their students often made poor choices rather than responsible ones. Some teachers described that even though students knew their behaviors were wrong, some still chose to make poor choices, such as playing nonacademic online games or searching for inappropriate topics, videos, or song lyrics during the school day.

Another area of concern related to students' ethical choices in digital contexts was that many students, often aware of the risks of irresponsible behavior, do not believe their actions could be permanent or capable of personally affecting them. One teacher described the constant issues with students violating copyright laws in their classwork, while other teachers discussed their perceptions of students' online communication activities and the students' frequent lack of care and civility when interacting with their peers. Based on the data, most teachers perceived that their students acted more boldly online than in person because they were not face-to-face with their peers. Further, some teacher participants noted that they observed their students would sometimes choose to ignore others' feelings and communicate with cruel words and behaviors in their online interactions.

Teacher participants also noted that although some of their students made poor choices in digital contexts at school, the school's Internet filters often thwarted students' attempts to behave irresponsibly. Several teacher participants perceived that most students knew that the district's technology department monitored their online activities as well. One teacher acknowledged that in addition to the school's filters he also used a classroom device-supervising app that allowed him to monitor several students' digital activities at once, curbing most negative student behaviors in his setting.

School Internet filters exist to protect students from real-world dangers and ensure a safe learning environment, and schools that certify there is Internet filtering software installed in their districts benefit from federal funding and special discounts on technology purchases. However, it is the subjective decision of school districts' technology departments to decide which other categories of websites to block for students. This often oversimplified method of filtering online content by blocking broad categories of digital information also precludes the real life, teachable

moments that could happen in supervised learning settings, better guiding and preparing students to make online ethical choices in their lives. According to Wineberg and McGrew (2016), when schools tightly control digital content and access, they are "effectively creating a generation of bubble children who never develop the immunities needed to ward off the toxins" of the wide-open, online world (para. 14). Although some teacher participants in this study perceived that filtering students' online choices at school prevented many negative issues, most teachers also perceived that outside of school students often engaged in risky, inappropriate, and unsupervised online behaviors. One teacher equated the lack of Internet filters at home to an open door, and other teachers agreed that their students took more risks at home by themselves or with their peers. Without question, schools and educators have a solemn obligation to prepare students for lifelong learning. Providing today's learners with practical tools to navigate messy, real-world situations can bolster their ethical competence in digital contexts.

According to the literature, the advent of any new technology requires new rules of engagement and a unique understanding of how it affects a person's goals, behaviors, and choices (Rutledge, as cited in Anderson & Rainie, 2018). Still, school district leaders and educators consistently find themselves tasked with breathlessly trying to keep pace with new technologies that students are already learning how to use outside of school. The ultimate challenge for schools is to not only keep up with new digital innovations but also to "establish rules for the road and understand the benefits and dangers of such technology-enabled power" (Rutledge, as cited in Anderson & Rainie, 2018, p. 64). It is imperative that today's digital learners make ethical choices about utilizing technology in responsible and beneficial ways, and schools and educators have crucial roles to play in equipping their students with the necessary skills to navigate future technologies successfully.

Student perceptions. In stark contrast to the teachers' negative perceptions regarding ethical choices in digital contexts, the student participants' perceptions in this study were significantly more positive. When asked how they demonstrated ethical behavior online, some students described the importance of respecting others and others' work. One student mentioned that ethical digital behavior included the need to cite online sources to avoid plagiarism. Most of the students perceived that controlling what they posted digitally, such as not spreading hate, not impersonating someone else, and not sharing inappropriate thoughts or materials, showed their ethical behavior.

By far, the data collected in this study showed most student perceptions of ethical behavior in digital contexts involved the necessity to protect personal information. Some students expressed an awareness of online tracking and identity theft issues that impacted their online behaviors. Most students (86%) perceived their ethical behaviors to be controlling what they posted online, not pretending to be someone else, or choosing not to share inappropriate comments or materials. Two of the students (29%) stated the importance of protecting passwords and not sharing information that could lead to disclosing one's physical location or stealing a person's identity. In the research coding process, just one student (14%) mentioned the negative perceptions of students' ethical behaviors, expressing an awareness of peers' potentially risky behaviors and the growing complexity of privacy issues.

An awareness of what constitutes responsible online behavior, however, does not ensure that students are choosing to make ethical choices when faced with them in digital contexts. Students in this study are informed about the dangers and risks of online interactions as well as the appropriate and responsible behaviors that an ethical digital citizen exhibits in a digital environment. What is less evident is whether their confident responses match their actual day-

to-day online actions and whether access to the Internet in unfiltered, unsupervised environments affect their choices. Based on the data in this study, teachers' perceptions and students' perceptions of their ethical digital behaviors are quite the opposite.

Implications

The research in this study served to address a gap in the existing literature and shed light on the perceptions of teachers and students regarding digital competence. The researcher designed a qualitative case study to explore how teachers perceived their students' digital literacy skills and how students perceived their digital literacy skills for learning. Connecting the study's findings to the two research questions and organizing the data by themes led to important implications for the field of education. The sections that follow present theoretical, practical, and future implications for teachers, K-12 schools, and teacher preparation programs in higher education. Additionally, these sections discuss the study's strengths, its weaknesses, and its credibility.

Theoretical implications. This research study employed Calvani et al.'s (2009) Digital Competence Framework to define digital literacy and identify and analyze the framework's core elements of technological competence, cognitive competence, and ethical competence. These three overlapping elements, when present, define integrated literacy, or true digital competence. Following Calvani et al.'s (2009) conceptual framework, all three elements—technological, cognitive, and ethical—are identified to some degree by the evidence in this study.

According to Calvani et al. (2009), individuals who exhibit *technological* literacy create and share new knowledge utilizing a variety of digital tools and resources. In this study, however, the data indicated teachers provided few and limited opportunities for students to create academic content, collaborate with peers, and share new ideas with an audience. Students

perceived individual assignments or projects as creative uses of digital tools, often limited to writing an essay or compiling a presentation.

Based on this study's findings, teachers need to prioritize opportunities for students to display their creativity in the learning process. Calvani et al. (2008) cautioned that, although the ability of learners to adapt their existing knowledge to new technologies will be critically important in future society, these skills are seldom bolstered in the educational context. Teachers would do well to provide today's learners with intentional opportunities to collaboratively face new problems, allowing students to apply their existing skills while also developing their capabilities to adapt to new tools and applications.

The element of *cognitive* competence encompasses the ability to critically evaluate digital text and data with the ability to analyze relevance and reliability (Calvani et al., 2009). According to the data in this study, teachers expressed genuine concerns about the depth of their students' critical thinking skills, even though the students perceived their skills with more confidence. Most teachers perceived their students' inabilities to detect bias, determine the reliability of digital content, and analyze and synthesize online information. Calvani et al. (2012) found that learners did not initially question whether the online content was reliable and did not demonstrate a sense of skepticism when encountering digital information. Prior literature also concluded that students regularly conducted superficial online searches that lacked "knowledge, understanding, and insight" (Kuiper, as cited in Calvani et al., 2012).

Based on this study's findings, teachers would do well to create opportunities for students to practice specific skills to promote critical thinking in digital contexts. These opportunities include but are not limited to 1) promoting mindfulness in the classroom by asking open-ended questions with adequate, extended time for deeper thought, 2) providing frequent opportunities

for students to practice active listening skills, and 3) presenting daily, real-world examples of potential inaccuracies or biases in online news and media for discussion.

The third element, *ethical* competence, involves the ability to productively interact with others using technology in responsible ways (Calvani et al., 2009). The data in this study indicated teachers' apprehension surrounding students' ethical literacy in digital contexts. These significant concerns stemmed from peer pressure, risk-taking, and a lack of awareness of the consequences of one's online actions. Calvani et al. (2012) posited that even though adolescents were aware of questionable online behaviors, they had difficulty understanding how it could personally impact them. Students in this research study described several examples of ethical digital actions, stating quite confidently that they exhibited responsible and respectful behaviors when using technology. Results of this study led the researcher to conclude that the students perceived themselves as fully capable of all the digital tools within their reach, yet there seems to be a disconnect between students' digital literacy skills awareness and digital literacy skills in practice.

Practical implications. This qualitative case study includes the research findings of seven teachers and seven students regarding their perceptions of students' digital literacy skills for learning. Utilizing the study's results, the researcher proposed practical ways to address the issues presented by the data. The researcher also delineated each of the identified issues and proposed practical recommendations to improve and enhance students' digital competency skills for learning. These implications are described and discussed in the following section.

Role of teacher preparation programs. It is evident that there is still a significant disconnect between what today's schools are teaching students and the skills today's employers are seeking in their job candidates. Higher education and teacher preparation programs would do

well to prioritize digital competences with pre-service teachers entering the field of education, not assuming their students are digitally literate or overlooking their competences merely because they were born into a technology-centered world. Embedding digital literacy skills into required university coursework would create teacher candidates with the essential skills for learning that today's digital world demands, empowering them as educators to foster those crucial skills in their future students.

Role of district curriculum decision-makers and school leaders. State and federally mandated accountability measures tied to funding for education continue to pressure schools to place significant emphasis on students' proficiencies in reading, writing, and math. Due to these mandates for standardized testing, schools place teachers under intense pressure to cover a myriad of content standards in the classroom. As a result, educators are overwhelmingly anxious and stressed, focusing solely on curricular content at the expense of the essential skills of creativity, collaboration, critical thinking, and communication. Although content knowledge may be much easier to measure and test than "soft skills," these 21st-century skills are critical to finding creative and innovative solutions for the problems of today's technology-centered world. School leaders and curriculum decision-makers would do well to consider the elements of digital competence as essential parts of all K-12 content curriculums, but only when teachers receive the frequent, ongoing professional development opportunities and support necessary for success.

Teacher training and support. Based on the results of this study, it is evident that teachers grasp the concept of digital literacy and understand its value for their students, but the findings also indicate that even their digital literacy skills vary greatly. Leaders first would need to provide professional development on the digital competence framework, emphasizing the

integral role digital literacy plays in preparing students for their future success in a digital society.

Second, leaders would positively impact teacher perceptions by allowing them to self-evaluate their digital competence in each of the technological, cognitive, and ethical contexts. Utilizing this data, teachers would form small collaborative teams, intentionally grouping with colleagues of varying digital skills. Each team would have at least one teacher with background, experience, or a keen interest in one of these areas: 1) designing creative, collaborative projects to demonstrate learning, 2) building critical thinking skills through discussion and debate, and 3) creating classroom skits or role-play for students to work through potential ethical dilemmas.

Third, teachers who perceive that cooperation and collaboration are synonymous need the training to understand that collaboration is not innate; it is a skill that requires persistent and intentional practice. Professional development focused on building collaborative skills with their colleagues would benefit teachers and demonstrate how to create a collaborative classroom environment with their students. Finally, teachers would work together in their teams to identify opportunities to weave the elements of digital literacy into their existing curriculum content areas. This way the process would not feel like an extra curriculum to master, but a seamless approach to ensuring digital literacy skills are practiced and refined in every classroom.

Future implications. The researcher identified few limitations in this current study. One limitation was the small sample size, characterized by one rural Midwestern public middle school and seven teacher and seven student participants selected for the research study. The goal of this case study was to explore teacher perceptions of students' digital literacy and students' perceptions of digital literacy for learning in one public middle school. Due to the study's sample size of only14 participants, the researcher identified the small sample population as a

weakness. Future research may challenge this weakness and strengthen the study by increasing the scope of the research from one school to one school district. Examining how other school districts' address and assess students' digital competences may also expand and enrich the present understanding of this research study.

Strengths and weaknesses. This research study focused on teacher and student perceptions of students' digital literacy skills for learning in one rural Midwestern public middle school. As a result, the findings of this study may not represent all teachers and students in this public-school district or other school districts. Another weakness of this research was the size of the study and the number of teacher and student participants, although this study may still serve to provide insight into the perceptions of students and teachers and students' digital literacy for learning. Even though these weaknesses existed, the researcher achieved the purpose of the research and contributed evidence relating to teachers' and students' perceptions of students' digital literacy. The strengths of this research can serve to inform and direct educational leaders and teachers as they strive to improve and extend the digital competences of the students in their midst.

Recommendations

In this section, the researcher proposes recommendations for future researchers to contribute to the study of teacher and student perceptions of students' digital literacy for learning. This section also summarizes the practical applications related to the results of the study. The following recommendations emphasize the overall significance of the study as well as its conclusion.

Recommendations for school leaders. Instructional time is precious. Teachers have a finite number of minutes with their students in any given school day, and the pressure to cover

content and prepare students to perform well on standardized tests is palpable and real. Successful implementation of teaching digital literacy across the curriculum, however, will require school leaders and teachers to understand the vital importance that time plays in promoting students' digital competence for learning.

Promoting mindfulness by sitting quietly to focus on deeper thought is tantamount to learning how to think creatively, and it takes time. Learning how to collaborate with others involves actively listening to other points of view to find consensus and new solutions, and it takes time. Knowing and deciding when to use technology and when to set it aside requires awareness of one's choices, and it takes time. School leaders willing to provide teachers the time to incorporate digital literacy skills into their curriculum will reap the benefits of responsibly and successfully preparing today's learners for tomorrow's world.

Recommendations for future research. Future research could study current pre-service teachers' perceptions of their digital literacy for learning in a university setting. Findings could indicate areas of digital competence in which college students are lacking. These findings could provide rich data for teacher education programs to consider and address, potentially resulting in a more intentional focus on the digital literacy of their students before they embark on their educational careers.

Another area of further research could be studying the potential rise of a new digital divide, one in which technology access may predict whether a student can or will succeed in the world's future workforce. Students who only utilize technology in superficial ways, primarily as consumers of digital resources, may find that they lack the digital literacy skills to be creators of new knowledge in digital contexts. Students who have not learned how to become content

creators may find fewer job opportunities and a less promising future. The role of K-12 education in creating digitally competent learners could also further this research.

Chapter 5 Summary

This chapter provided a comprehensive discussion concerning the findings in this study considering the existing literature about teacher and student perceptions of digital literacy for learning. The discussion centered on the contribution of the findings to the known literature as well as the impacts on the field of education. The chapter also addressed the limitations of the research study, practical and future implications for fostering students' digital competence, and recommendations for future research.

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Appendix A: Teacher Participant Consent Form

Researcher Name: Dawn B. Prescott

Phone: xxx-xxx-xxxx

Email Address: xxxx@xxxxxx

Purpose and what you will be doing:

The purpose of this survey is to gather information from students and teachers on their perceptions of student digital literacy skills. We expect approximately 14 volunteers. No one will be paid to be in the study. We will begin enrollment in _____, and end enrollment in _____. To be part of the study, you will complete an online questionnaire, participate in a small group interview, and take part in a focus group. Doing these things should take less than four hours of your time.

Risks:

There are no risks to participating in this study other than providing your information. However, we will protect your information. Any personal information you provide will be coded so it cannot be linked to you. Any name or identifying information you give will be kept securely via electronic encryption. When we, or any of our investigators, look at the data, none of the data will have your name or identifying information. We will only use a secret code to analyze the data. We will not identify you in any publication or report. Your information will be kept private at all times and then all study documents will be destroyed 3 years after we conclude this study.

Benefits:

Information you provide will help educators understand the perceptions of teacher and students' digital literacy skills. There is no personal benefit to participating in this study.

Confidentiality:

This information will not be distributed to any other agency and will be kept private and confidential. The only exception to this is if you tell us abuse or neglect that makes us seriously concerned for your immediate health and safety.

Right to Withdraw:

Your participation is greatly appreciated, but we acknowledge that the questions we are asking are personal in nature. You are free at any point to choose not to engage with or stop the study. You may skip any questions you do not wish to answer. This study is not required and there is no penalty for not participating. If at any time you experience a negative emotion from answering the questions, we will stop asking you questions.

Contact Information:

You will receive a copy of this consent form. If you have questions you can talk to or write the principal investigator, Dawn Prescott, at email: xxxx@xxxxxx. If you want to talk with a participant advocate other than the investigator, you can write or call the director of our institutional review board, Dr. OraLee Branch (email xxxxx@cu-portland.edu or call xxx-xxx-xxxx).

Your Statement of Consent:

I have read the above information. I asked questions if I had them, and my questions were answered. I volunteer my consent for this study.

_____	_____
Participant Name	Date
_____	_____
Participant Signature	Date
_Dawn B. Prescott_____	4/12/18____
Investigator Name	Date
Dawn B. Prescott	4/12/18
Investigator Signature	Date

Investigator: Dawn B. Prescott

c/o: Professor Donna Graham

Concordia University–Portland

2811 NE Holman Street

Portland, Oregon 97221

Appendix B: Parent/Guardian Consent Form

Researcher Name: Dawn B. Prescott

Phone: xxx-xxx-xxxx

Email Address: xxxx@xxxxxx

Your child is invited to participate in a research study conducted by Dawn B. Prescott, a current doctoral candidate in the Ed. D. program at Concordia University–Portland. This study is designed to understand how students and teachers perceive student digital literacy skills. Your child was selected as a possible participant in this study because he/she is a current student in a middle school setting.

If you decide to allow your child to participate, your child will complete an anonymous online survey regarding digital skills, participate in a face-to-face interview with the researcher, Dawn Prescott, regarding digital skills, and take part in a small group discussion to confirm the responses. The interview and discussion group will take no more than one hour each. All audiotaped responses will be kept confidential and anonymous and used simply to ensure the researcher's accuracy in recording responses. There are no costs or rewards for participating in this research.

Any information that is obtained in connection with this study and that can be identified with your child will remain confidential and will be disclosed only with your permission or as required by law. Subject identities will be kept confidential. The information will be compiled to write a case study on the topic of perceived digital literacy skills. The dissertation committee, the university committee, and the institutional review board will view the report. The complete dissertation will then be published.

Your child's participation is voluntary. Your decision whether or not to allow your child to participate will not affect your or your child's relationship with Dawn Prescott or Xxxxxx Middle School. If you decide to allow your child to participate, you and/or your child are free to withdraw your consent and discontinue participation at any time without penalty.

If you have any questions about the study, please feel free to contact the researcher listed above by phone or email. You will be offered a copy of this form to keep.

Your signature indicates that you have read and understand the information provided above, that you willingly agree to allow your child to participate, that you and/or your child may withdraw your consent at any time and discontinue participation without penalty, that you will receive a copy of this form, and that you are not waiving any legal claims.

Parent/Guardian: _____ Date:_____

Please return this signed form to the office at Xxxxxx Middle School, xxx xxxx Street, City, State. Thank you.

Appendix C: Padre o tutor formulario de consentimiento

Nombre del investigador: Dawn B. Prescott

Phone: xxx-xxx-xxxx

Correo electrónico: xxxx@xxxxxx

Su hijo es invitado a participar en un estudio de investigación realizado por Dawn B. Prescott, actual candidato doctoral en el Ed. D. program en Concordia University–Portland. Este estudio está diseñado para entender cómo los estudiantes y profesores perciben habilidades de alfabetización digital del alumno. Su hijo fue seleccionado como un posible participante en este estudio porque es un alumno actual en un entorno de escuela media.

Si usted decide permitir que sus hijos participen, su hijo completar una encuesta online anónima sobre competencias digitales, participar en una entrevista cara a cara con el investigador, Dawn Prescott, sobre competencias digitales y participar en un grupo pequeño discusión para confirmar las respuestas. El grupo de entrevista y discusión tomará no más de una hora. Todas las respuestas se mantendrán confidenciales y anónimos y usados simplemente para asegurar la precisión del investigador en la grabación de las respuestas. No hay costos ni recompensas por participar en esta investigación.

Cualquier información que se obtiene en relación con este estudio y que pueden ser identificados con su hijo permanecerá confidencial y será revelada solamente con su permiso o como requerido por la ley. Tema identidades se mantendrá confidenciales. Se compilarán la información para redactar un estudio de caso sobre el tema de la alfabetización digital percibida. El Comité de disertación, el Comité de la Universidad y la Junta de revisión institucional va a ver el informe. Luego se publicará la tesis completa.

Su participación es voluntaria. Su decisión de si o no permitir que su hijo / a participe no afectará relación tu o tu hijo con Dawn Prescott o secundaria de Xxxxxx. Si usted decide permitir que sus hijos participen, usted o su hijo es libre de retirar su consentimiento y suspender la participación en cualquier momento sin penalización.

Si tienes cualquier duda sobre el estudio, sienta por favor libre entrar en contacto con el investigador mencionado por teléfono o correo electrónico. Se le ofrecerá una copia de este formulario para mantener. Su firma indica que usted ha leído y entendido que la información proporcionada anteriormente, que aceptas voluntariamente permitir que sus hijos participen, que usted o su niño puede retirar su consentimiento en cualquier momento y deje de participar sin pena, que usted recibirá una copia de este formulario, y que no se renuncia a cualquier reclamación legal.

Padres: _____ Fecha: _____

Por favor devuelva este formulario firmado a la oficina en la escuela intermedia de Xxxxx,

Gracias.

Appendix D: Student Letter of Assent

Dear Student:

I am doing a research study about how students perceive their digital literacy skills. A research study is a way to learn more about people. If you decide you want to be part of this study, you will be asked to participate in an online survey and two interviews with me. The interviews will be conducted at school before or after school, or after early dismissal on Fridays, depending on which is most convenient for you.

There are some things you should know about this study. Your name will not be revealed in the study, but I will be asking you questions about how you personally feel about technology and the way you learn. I will be audiotaping each interview so I can make sure to get your wording exact. In the first round of interviews, I will be interviewing you individually, but after that you will be in a small group of students.

When I am finished with this study, I will write a report about what was learned. This report will not include your name or that you were in the study. The information will be published in the hopes that the research will help teachers and schools do a better job of teaching you to be an empowered and successful digital learner. It may even help our teachers and school do a better job in the future of educating students like you.

You do not have to participate in this study, and not participating will not affect your grade, your relationship with me as your teacher, or anything else about what you do at school. If you decide to stop after we begin, that is okay, too. Your parents know about the study as well.

If you decide you want to be in this study, please print and sign your name below.

I, _____, want to be in this research study.

_____ _____

(sign your name here) (date)

Thank you for your attention in reading this form and your consideration in whether or not to participate in this study.

_____

Investigator: Dawn Prescott Email: xxxx@xxxxxx

c/o: Dr. Donna Graham

Concordia University–Portland

2811 NE Holman Street

Portland, Oregon 97221

Appendix E: Student Digital Skills Questionnaire

Part I.

1. How often do you use technology to write an essay?

__ At least once a week __At least once a month __Less often __Not at all

2. How often do you use technology to write in a journal?

__ At least once a week __At least once a month __Less often __Not at all

3. How often do you use technology to work out mathematical problems?

__ At least once a week __At least once a month __Less often __Not at all

4. How often do you use technology to create a multimedia project using video/audio/images?

__ At least once a week __At least once a month __Less often __Not at all

Part II.

5. How would you rate yourself on your ability to use appropriate and effective search terms to find information online?

__ Excellent __ Very good __ Good __ Fair __Poor

6. How would you rate yourself on your ability to use multiple online sources to effectively support an argument?

__ Excellent __ Very good __ Good __ Fair __Poor

7. How would you rate yourself on your ability to decide on the quality and accuracy of information you find online?

__ Excellent __ Very good __ Good __ Fair __Poor

8. How would you rate yourself on your ability to recognize bias in content you find online?

__ Excellent __ Very good __ Good __ Fair __Poor

Part III.

9. Explain how you judge the quality of online information.

10. Explain how you show responsible behavior online.

11. Explain your understanding of privacy issues in digital communication and online.

12. How do you communicate your ideas in creative and interesting ways online?

Part IV.

13. How confident are you in using technology to write an essay for a class at school?

__ Very __Somewhat __Not very __Not at all

14. How confident are you in using technology to write in a journal for a class at school?

__ Very __Somewhat __Not very __Not at all

15. How confident are you in using technology to work out mathematical problems?

__ Very __Somewhat __Not very __Not at all

16. How confident are you in using technology to create a multimedia project using video/audio/images for an online audience?

__ Very __Somewhat __Not very __Not at all

Thank you for your responses.

Appendix F: Teacher Perceptions of Student Digital Skills Questionnaire

Part I.

1. How often do you think students use technology to write an essay?

__ At least once a week __At least once a month __Less often __Not at all

2. How often do you think students use technology to write in a journal?

__ At least once a week __At least once a month __Less often __Not at all

3. How often do you think students use technology to work out mathematical problems?

__ At least once a week __At least once a month __Less often __Not at all

4. How often do you think students use technology to create a multimedia project using video/audio/images?

__ At least once a week __At least once a month __Less often __Not at all

Part II.

5. How would you rate students overall on their ability to use appropriate and effective search terms to find information online?

__ Excellent __ Very good __ Good __ Fair __Poor

6. How would you rate students overall on their ability to use multiple online sources to effectively support an argument?

__ Excellent __ Very good __ Good __ Fair __Poor

7. How would you rate students overall on their ability to decide on the quality and accuracy of information they find online?

__ Excellent __ Very good __ Good __ Fair __Poor

8. How would you rate students on their ability to recognize bias in content they find online?

__ Excellent __ Very good __ Good __ Fair __Poor

Part III.

9. Explain what you observe about how students judge the quality of online information.

10. Explain what you observe about how students show responsible behavior online.

11. Explain what you observe about students' understanding of privacy issues in digital communication and online.

12. In what ways do you observe students communicating their ideas in creative and interesting ways online?

Part IV.

13. How confident are students in using technology to write an essay for a class at school?

__ Very __Somewhat __Not very __Not at all

14. How confident are students in using technology to write in a journal for a class at school?

__ Very __Somewhat __Not very __Not at all

15. How confident are students in using technology to work out mathematical problems?

__ Very __Somewhat __Not very __Not at all

16. How confident are students in using technology to create a multimedia project using video/audio/images for an online audience?

__ Very __Somewhat __Not very __Not at all

Thank you for your responses.

Appendix G: Student Interview Questions

1. Describe the ways in which you use technology every day.

2. On which of those activities do you spend the most time?

3. What does the term "**digital**" mean to you?

4. So now let's consider the definition of **digital literacy**. Putting the words digital and literacy together, digital literacy is "the ability to read and interpret media (text, sound, images), to reproduce data and images through digital manipulation, and to evaluate and apply new knowledge gained from digital environments" (Jones-Kavilier & Flannigan, 2006, p. 9).

How would you define digital literacy in your own words?

5. What kinds of skills should a person who is digitally literate possess?

6. Why is it important to be digitally literate?

7. Overall, how would you describe your digital literacy skills?

8. To wrap up, what are your thoughts about your current digital literacy for learning?

Appendix H: Teacher Interview Questions

1. Describe the ways you see or know students use technology every day.

2. On which of those activities do you see or know students spend the most time?

3. What does the term "**digital**" mean to you?

4. So now let's consider the definition of **digital literacy**. Putting the words digital and literacy together, digital literacy is defined as "the ability to read and interpret media (text, sound, images), to reproduce data and images through digital manipulation, and to evaluate and apply new knowledge gained from digital environments" (Jones-Kavilier & Flannigan, 2006, p. 9).

How would you define digital literacy in your own words?

5. What kinds of skills should a person who is digitally literate possess?

6. Why is it important for students to be digitally literate?

7. Overall, how would you describe your students' digital literacy skills?

8. To wrap up, what are your thoughts about your perceptions of students' digital literacy for learning?

Appendix I: Student Focus Group Questions

Say: The purpose of this focus group is to clarify your interview responses and provide an opportunity to share any additional thoughts on the topic of digital literacy.

Let's review the definition of **digital literacy** that we discussed in your interview**.** Putting the words digital and literacy together, digital literacy is defined as "the ability to read and interpret media (text, sound, images), to reproduce data and images through digital manipulation, and to evaluate and apply new knowledge gained from digital environments" (Jones-Kavilier & Flannigan, 2006, p. 9).

1. To the question, "How would you define digital literacy in your own words?" you answered…

   Is there anything you would like to add or clarify?

2. To the question, "What kinds of skills should a person who is digitally literate possess?" you answered…

   Is there anything you would like to add or clarify?

3. To the question, "Why is it important to be digitally literate?" you answered…

   Is there anything you would like to add or clarify?

4. To the question, "Overall, how would you describe your digital literacy skills?" you answered…

   Is there anything you would like to add or clarify?

5. Do you have any additional thoughts about your perceptions of digital literacy for learning?

Appendix J: Teacher Focus Group Questions

Say: The purpose of this focus group is to clarify your interview responses and provide an opportunity to share any additional thoughts on the topic of digital literacy.

Let's review the definition of **digital literacy** that we discussed in your interview**.** Putting the words digital and literacy together, digital literacy is defined as "the ability to read and interpret media (text, sound, images), to reproduce data and images through digital manipulation, and to evaluate and apply new knowledge gained from digital environments" (Jones-Kavilier & Flannigan, 2006, p. 9).

1. To the question, "How would you define digital literacy in your own words?" you answered…

   Is there anything you would like to add or clarify?

2. To the question, "What kinds of skills should a person who is digitally literate possess?" you answered…

   Is there anything you would like to add or clarify?

3. To the question, "Why is it important for students to be digitally literate?" you answered…

   Is there anything you would like to add or clarify?

4. To the question, "Overall, how would you describe your students' digital literacy skills?" you answered…

   Is there anything you would like to add or clarify?

5. Do you have any additional thoughts about your perceptions of students' digital literacy for learning?

Appendix K: Letter of Permission for Off-Campus Research

March 5, 2018

Institutional Review Board

Concordia University–Portland

Portland, OR 97211

Dear IRB Members,

Upon review of the proposed study, "Teacher and Student Perceptions of Digital Skills: A Qualitative Case Study" presented by Mrs. Dawn B. Prescott, a doctoral student at Concordia University–Portland, permission has been granted for the study to be conducted with the Xxxxxx School District.

This project study's intent is to explore teacher and student perceptions of a 21st century digital literacy framework, including the essential components they believe are part of the framework. A qualitative design was selected for this study, and data will be collected using an online questionnaire delivered to teachers and students at the research site (Xxxxxx Middle School), focus groups (targeting digital literacy skills), and interviews with teachers and students. The data collected will be analyzed through an inductive manner with attention to the research question, the corresponding sub-questions, and the relationships discovered. The overall goal of this study is to determine the participants' perceptions of digital literacy to assist educators in meeting the demands of 21st century learners' digital literacy needs.

I agree to provide Mrs. Prescott with access to the educators and students of Xxxxxx School District's Xxxxxx Middle School for the purpose of gathering data through an online questionnaire, focus groups, and interviews. Mrs. Prescott will contact the research site's

administrators during the second semester of the 2017-2018 school year to set up the initial meeting, establish the online questionnaire, and begin focus and interview group development. Mrs. Prescott will provide the Xxxxxx School District administrative office with copies of all Concordia University–Portland IRB-approved documents prior to data collection. It is understood that all data collected will be completely anonymous and participants will not be asked to provide any personal information that would identify them in the questionnaire, focus groups, or interviews.

Participants will be given the opportunity, even after they agree to participate, to opt out with no questions asked. All data will be coded to identify themes, patterns or relationships. Steps will be taken to ensure the security and anonymity of the data through an encrypted portable hard drive, and all data will be stored off-site in the researcher's home. Upon conclusion of the study, a copy of the final write-up will be provided to the school district.

If Concordia University–Portland's IRB has any concerns about the permission being granted by this letter, please contact the District Superintendent at xxx-xxx-xxxx.

Sincerely,

Signature _____

Printed Name _____

Title _____

Date _____

Appendix L: School Permission to Conduct Research

SCHOOL PERMISSION TO CONDUCT RESEARCH

Dear Institutional Review Board:

The purpose of this letter is to inform you that I give Dawn B. Prescott permission to conduct the research titled "Perceived Skills of Today's Digital Learner" at Schuyler Middle School. This also serves as assurance that this school complies with requirements of the Family Educational Rights and Privacy Act (FERPA) and the Protection of Pupil Rights Amendment (PPRA) and will ensure that these requirements are followed in the conduct of this research.

Sincerely,

Middle School Principal

- The right of a parent of a student to inspect, upon the request of the parent, a survey created by a third party before the survey is administered or distributed by a school to a student. Any applicable procedures for granting a request by a parent for reasonable access to such survey within a reasonable period of time after the request is received.
- Arrangements to protect student privacy that are provided by the agency in the event of the administration or distribution of a survey to a student containing one or more of the following items (including the right of a parent of a student to inspect, upon the request of the parent, any survey containing one or more of such items): Political affiliations or beliefs of the student or the student's parent. Mental or psychological problems of the student or the student's family. Sex behavior or attitudes. Illegal, anti-social, self-incriminating, or demeaning behavior. Critical appraisals of other individuals with whom respondents have close family relationships. Legally recognized privileged or analogous relationships, such as those of lawyers, physicians, and ministers. Religious practices, affiliations, or beliefs of the student or the student's parent. Income (other than that required by law to determine eligibility for participation in a program or for receiving financial assistance under such program).
- The right of a parent of a student to inspect, upon the request of the parent, any instructional material used as part of the educational curriculum for the student. Any applicable procedures for granting a request by a parent for reasonable access to instructional material received.
- The administration of physical examinations or screenings that the school or agency may administer to a student.
- The collection, disclosure, or use of personal information collected from students for the purpose of marketing or for selling that information (or otherwise providing that information to others for that purpose), including arrangements to protect student privacy that are provided by the agency in the event of such collection, disclosure, or use.
- The right of a parent of a student to inspect, upon the request of the parent, any instrument used in the collection of personal information before the instrument is administered or distributed to a student. Any applicable procedures for granting a request by a parent for reasonable access to such instrument within a reasonable period of time after the request is received.

Appendix M: Statement of Original Work

The Concordia University Doctorate of Education Program is a collaborative community of scholar-practitioners, who seek to transform society by pursuing ethically-informed, rigorously-researched, inquiry-based projects that benefit professional, institutional, and local educational contexts. Each member of the community affirms throughout their program of study, adherence to the principles and standards outlined in the Concordia University Academic Integrity Policy. This policy states the following:

Statement of academic integrity.

As a member of the Concordia University community, I will neither engage in fraudulent or unauthorized behaviors in the presentation and completion of my work, nor will I provide unauthorized assistance to others.

Explanations:

What does "fraudulent" mean?

"Fraudulent" work is any material submitted for evaluation that is falsely or improperly presented as one's own. This includes, but is not limited to texts, graphics and other multi-media files appropriated from any source, including another individual, that are intentionally presented as all or part of a candidate's final work without full and complete documentation.

What is "unauthorized" assistance?

"Unauthorized assistance" refers to any support candidates solicit in the completion of their work, that has not been either explicitly specified as appropriate by the instructor, or any assistance that is understood in the class context as inappropriate. This can include, but is not limited to:

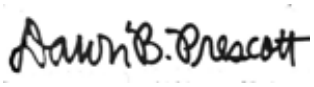
- Use of unauthorized notes or another's work during an online test
- Use of unauthorized notes or personal assistance in an online exam setting
- Inappropriate collaboration in preparation and/or completion of a project
- Unauthorized solicitation of professional resources for the completion of the work.

Statement of Original Work (Continued)

I attest that:

1. I have read, understood, and complied with all aspects of the Concordia University-Portland Academic Integrity Policy during the development and writing of this dissertation.

2. Where information and/or materials from outside sources has been used in the production of this dissertation, all information and/or materials from outside sources has been properly referenced and all permissions required for use of the information and/or materials have been obtained, in accordance with research standards outlined in the *Publication Manual of The American Psychological Association.*



Digital Signature

Dawn B. Prescott

Name (Typed)