

2016

Internet Reading and Learning in a Guided Reading Context

Jennifer Van Allen
University of Central Florida

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INTERNET READING AND LEARNING IN A GUIDED READING CONTEXT

by

JENNIFER H. VAN ALLEN

M.A. Education, University of Central Florida, 2010

B.S. Elementary Education, University of Central Florida, 2002

A dissertation in practice submitted in partial fulfillment of the requirements
for the degree of Doctor of Education
in the College of Education and Human Performance
at the University of Central Florida
Orlando, Florida

Summer Term
2016

Major Professor: Vassiliki I. Zygouris-Coe

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ABSTRACT

Many employers are calling for high school graduates who are equipped with skills to research, manage, and process information from multiple sources and communicate effectively to others through a variety of sources. Yet, students are not being appropriately prepared with online research and comprehension skills in schools today. A major factor impacting this problem is that teachers do not possess the knowledge and skills to effectively address online research and comprehension skills in the intermediate grades. This dissertation in practice proposes a solution to this problem of practice through the design of an educative curriculum that introduces online research and comprehension skills to upper elementary students. It also provides teachers with necessary knowledge to aid their pedagogical design capacity throughout the curriculum. Prior to the development of the curriculum, a case study was conducted to determine how a fourth-grade teacher integrates digital tools during guided reading lessons to support students' development of online research and comprehension skills. The results showed that the implementation was challenging and resulted in role changes for both the teacher and students. These findings supported the design choices of the base curriculum for students, set within the guided reading framework, and educative features to support teachers.

To my parents, for always believing in me and instilling in me a tireless work ethic. To my grandmother, for teaching me to never give up even through life's hardships. To my teachers, for pushing me to achieve more. To Mike, for putting up with my constant work, doing most of the chores, and loving me through it all. Thank you all for your endless love and support. To each of you, I simply say thank you, and I love you.

ACKNOWLEDGMENTS

I would like to thank all of the professors who guided me through this doctoral journey while at the University of Central Florida. The knowledge and passion you instilled in me has helped me develop into the educator I am today and will be in the future. Know that you have each made a significant contribution to my life and future work.

Dr. Vassiliki Zygouris-Coe, the guidance and mentorship you have provided me throughout this entire process has been invaluable. You are an amazing educator, and I am so blessed to have been under your guidance. Thank you for going above and beyond to support and guide me as a writer, presenter, researcher, and educator. Words cannot express the impact you have had on my life.

Dr. David Boote, your questions and feedback always pushed me to think more deeply and helped me reach the next level. Thank you for helping me consider other perspectives even when I was blind to them.

Dr. Nicole Olcese, thank you for sharing your passion for digital literacies. The resources, feedback, and expertise you provided were truly appreciated.

Dr. Lorrie Butler, my field mentor and friend, the leadership you have provided me has helped me grow in immeasurable ways. You have nurtured me as an educator from the very first day of my teaching career. Through the good times and bad, you have been my rock and greatest advocate. Thank you for your genuine love and support through it all.

To my cohort, thanks for the laughs, support, and knowledge you have all shared with me throughout our journey in this program. Lenora, thank you for reading and discussing anything

and everything at all hours of the day and night! I could never have made it without your support.

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LIST OF ACRONYMS/ABBREVIATIONS

CCSS	Common Core State Standards
CES	Creekside Elementary School
DCP	Digital Classroom Plan
DiP	Dissertation in Practice
Ed.D.	Doctor of Education in Education
LAFS	Language Arts Florida Standards
IRT	Internet Reciprocal Teaching
ISTE	International Society for Technology in Education
NETS	National Educational Technology Standards
NETS-S	National Educational Technology Standards for Students
NETS-T	National Educational Technology Standards for Teachers
PCPS	Poppleton County Public Schools
PD	Professional Development
TICA	Teaching Internet Comprehension to Adolescents
TPACK	Technological Pedagogical Content Knowledge Model
UbD	Understanding by Design

CHAPTER 1 PROBLEM OF PRACTICE

Introduction

Imagine walking into a fourth- or fifth-grade classroom where each student has his or her personal school-issued device to utilize. To most students, this seems like a dream come true. This is a best-case scenario for 10-year-old Elise. Elise attends an elementary school that is participating in a one-to-one digital device initiative, meaning that she has her own school-issued device that she takes with her to school and can also use at home. According to Elise,

I use my computer every day to talk with my friends on video messaging, listen to music, watch videos, play games, and find out about stuff. Sometimes my friends and I make YouTube videos for each other, which are hilarious stunts they pull off.

Ask Elise about how she uses her device in school and one gets a different story.

In most of my classes, we don't use our computers much, other than to work on programs or type up assignments. Sometimes the teachers just put up a worksheet on Google Docs and we have to go in, make a copy, and answer the questions. Then we email the worksheet to the teacher.

Although this is a fictitious scenario based upon my professional experience in schools, it is clear that technologies are quickly becoming more prevalent in classrooms across the country. This widening gap between how students use digital devices in school and out of school is problematic at many levels.

Today many elementary classrooms in the United States are pictures of students sitting in neat rows, listening to lectures, and completing work independently. Students dutifully take notes and regurgitate information on assessments without any use of technology or digital texts.

However, this type of instruction is antiquated when one considers the requirements of today's workforce. A recent Pew Report provides a picture of the digital future in stating that "the world is moving rapidly towards ubiquitous connectivity that will further change how and where people associate, gather and share information, and consume media" (Pew Research Center, 2014, p. 1). Researchers have shown that teachers are not providing students with meaningful instruction that integrates the digital literacy skills students will need to be successful in future careers (Hutchison, 2012; Hutchison & Reinking, 2011). Further examination shows that there is a paucity of research on how to develop students' digital literacy skills, especially in the context of small group guided reading instruction. The problem of practice that this dissertation in practice addressed was the need to provide students with explicit instruction in digital literacy skills, specifically related to online research and comprehension within the context of the guided reading framework.

As an avid technology user, I often pick up my phone or open my computer to find information that satisfies my curiosities. Admittedly, some of these searches result in false or inaccurate knowledge or lead me to advertisements. When I watch students search for information, I see many of them also draw similar inaccurate information, or advertising results without considering the reliability and validity of the source, which leads me to reflect on the ways that we, as educators, are preparing students for effective online inquiries. During my time as a district literacy coach, I had the opportunity to visit many diverse schools and classrooms, and I observed evidence of this problem of practice firsthand. Often, I saw minimal usage of technology by students and teachers during the literacy block, even in schools where technology was abundant. Although teachers sometimes included interactive SMART board

lessons as part of their instruction, students were rarely encouraged to use the Internet in authentic ways, such as searching for answers to their questions or solving problems. I noticed that in many classrooms student-posed questions that did not immediately relate to the content and went largely unanswered, making me consider how we could better teach students the basics of searching for and answering their questions. Much of the professional development (PD) that I conducted as a district literacy coach revolved around guided reading instruction. My expanded understandings of the guided reading framework led me to think about how the supportive nature of guided reading instruction could be incorporated to help students develop their skills as online researchers. This drove me to develop a solution for this complex problem of practice.

Significance of the Problem

Currently, there is an abundance of research on how readers construct meaning of traditional printed texts (Pressley, 2000). However, the progressively diverse types of medias and formats of text we read today, including Internet reading, video clips, and social media networks, require different comprehension skills and strategies (Coiro & Dobler, 2007). These multiple, multimodal, and multifaceted texts on the screen require different skills and strategies than static texts that many learned from in the past, especially since new literacies are ever-changing (Leu et al., 2007). According to some researchers, readers of digital texts must generate questions as they locate, evaluate, analyze, and synthesize information from multiple, varied sources (Coiro & Dobler, 2007; Leu, Kinzer, Coiro, Castek, & Henry, 2013). Bawden (2008) referred to the mindset or critical thinking required by texts of diverse forms as digital literacy. Therefore, our educational practices should be changing in dramatic ways to include

collaborative, participatory, and meaningful learning experiences that will, to the fullest extent possible, mirror students' future world and experiences with digital literacy (Greenhow, Robelia, & Hughes, 2009). Internet access on digital devices gives students 24-hour access to unlimited information, making the inclusion of such sources as learning tools an educational necessity in all classrooms.

Many believe that digital literacy only refers to general knowledge and skill with operating specific software programs and/or digital devices (Buckingham, 2008). In reality, this definition grossly underestimates the depth of digital literacy skills required by readers to comprehend and learn from digital texts. Coiro and Dobler (2007) examined the online reading strategies used by skilled sixth-grade readers and found that good readers had to “flexibly draw from at least four knowledge sources, regularly make forward inferences, and self-regulate the relevancy and efficiency of one’s self-directed pathways through Internet text” (p. 243). Leu et al. (2013) identified five processing practices necessary for online reading comprehension: “read to identify important questions, read to locate information, read to evaluate information critically, read to synthesize information, and read to communicate information” (p. 1164). Online readers must integrate information on a chosen topic from multiple sources in diverse formats (such as YouTube videos, images, and hyperlinked text) through self-directed, unique reading paths as they follow hyperlinks to relevant information, making digital literacy skills similar to yet different from traditional literacy skills. In the present study, digital literacy was defined as the meaning-making practices readers use to construct new knowledge and communicate information and ideas through a variety of online tools including, but not limited to, websites, ‘zines, blogs, multimedia presentations, and audio-visual media (Rowse & Lapp, 2011).

A close examination of the definition of digital literacy reveals many critical thinking skills as students evaluate and analyze online texts. Students must employ effective search strategies, generating key words and phrases and then using search engines to critique short descriptions of sources and identify sources with the most relevant information (Coiro, 2005). Once they have identified a source, students must carefully browse the contents of the website, evaluating the information provided for bias, accuracy, and reliability. As they connect to other sources through hyperlinks, students engage in metacognitive thinking processes as they self-monitor to ensure they are continuously focused on the topic and synthesize information across sources (Coiro, 2005). All of these processes occur simultaneously and involve high levels of critical thinking as fast-paced decisions are made.

Calls from researchers, professional organizations, and new educational standards for digitally literate citizens are endless. Wagner (2008) identified seven critical survival skills that students need to master to become global citizens in the 21st century. Among these skills are critical thinking, accessing, and synthesizing information. Wagner noted that 21st century employees have to manage countless amounts of information from a variety of sources daily. Without the required skills needed to process the information effectively, employees are ill-equipped to handle their roles and responsibilities. The Partnership for 21st Century Skills (n.d.) has created a framework that focuses on 21st century student success outcomes for which critical thinking is included within the learning and innovation skills. The framework also includes information, media, and technology skills as key outcomes for 21st century learners. A position statement from the International Literacy Association states “To become fully literate in today’s world, students must become proficient in the new literacies of 21st century technologies”

(International Reading Association, 2009, para. 1). The Common Core State Standards (CCSS) and college and career readiness have called for graduates adept at researching ideas, critically evaluating, synthesizing, and analyzing online information, collaborating with others, and creating and sharing information to achieve goals personally, professionally, and academically (National Governors Association Center for Best Practices & Council of Chief State School Officers [NGA & CCSSO], 2010). These calls for critical thinking and effective online research and comprehension skills leave educators with an enormous responsibility as they grapple with the problem.

Given the ubiquity of the Internet, students increasingly view and use the Internet as a way to complete schoolwork, acquire information, connect with others, seek guidance on the life issues they face, and store their files (Levin & Arafeh, 2002). However, it is clear that schools are not equipping students with the research skills they need to effectively search for, analyze, evaluate, and synthesize information from Internet sources. Schools are not preparing students to be digitally literate which includes “knowing how and when to use which technologies and knowing which forms and functions are most appropriate for one’s purposes” (Greenhow et al., 2009, p. 250). An era of new educational standards requiring students to use digital tools as a means of learning and communicating demands that teachers learn how to support and develop students’ digital literacy skills to best prepare students for online research and comprehension.

Why This is a Problem

Historically in schools, literacy instruction focused on research skills consisted of teaching students how to use the card catalog to find books related to the topic being studied. Students were required to use the literacy skills they were learning in class to read the books and

find facts related to their topics. These facts may have come from one or a few sources and may have been presented orally or in written format. At present, students utilize online card catalogs. This requires searches employing multiple key words and phrases to find relevant materials. The materials found may be books, news articles, research reports, multimedia sources, and even websites available via the Internet. To make sense of all of these sources of information, students must learn how to navigate through the information, analyze the sources for credibility, critically evaluate, and synthesize the information into a coherent presentation (whether that be a multimedia presentation, written report, or oral presentation with the use of visual aids) (Greenhow et al., 2009). Today, in an era where information is abundant on the Internet, teachers must shift their thinking about how to teach research skills even though they may have learned to research differently. This may be one of the biggest barriers because the saying “old habits die hard” is relevant to teachers who continue to utilize tried and true teaching methods as opposed to adapting these methods to today’s learners and digital culture (Buckingham, 2007).

Today’s students, known as the millennials, effortlessly use a variety of digital technologies for communication and entertainment daily (Rosen, 2011). However, according to researchers, teachers rarely use these technologies in their instruction even though students prefer learning through them and are more engaged with instruction that integrates interactive digital tools (Greenhow et al., 2009). Hutchison & Reinking (2011) conducted a survey on literacy teachers’ perceptions of technology integration and found a gap between the perceived importance of technology integration and actual use. Currently, many teachers see technology as supplemental to instruction as opposed to redefining teaching and learning (Hicks & Turner, 2013; Hutchison & Reinking, 2011). For example, a key finding in Hutchison and Reinking’s

(2011) study was that almost all literacy teachers thought that technology should be integrated into instruction, but only 38% of teachers used technology as presentation tools and less than 10% of teachers included technology in authentic, learner-centered ways that required research skills (Hutchison & Reinking, 2011). A similar context applies to technology integration at Creekside Elementary (CES) (pseudonym), where I worked as the literacy coach during this dissertation in practice (DiP). It is clear that efforts to incorporate scaffolded practice in online research and comprehension skills within the guided reading framework in intermediate (fourth- and fifth-grade) classrooms at CES were nonexistent. Following is a description of Creekside Elementary School.

Creekside Elementary School

CES was a moderately sized elementary school located in the large, urban school district in Florida, known as Poppleton County Public Schools (PCPS) (pseudonym). The school's mission statement, to lead our students to success with the support and involvement of families and the community, and vision statement, to be the top producer of successful students in the nation, mirrored those of the district (PCPS, 2014a; CES, 2015). The school served a diverse group of learners with about 650 students in grades prekindergarten to fifth grade and was a Title 1 school. Table 1 provides detailed demographic information.

Table 1

Creekside Elementary School Demographic Data

Demographic Criteria	% of Students
Female	48.2%
Male	51.8%
American Indian/Alaskan Native	0.3%
Asian/Pacific Islander	1.5%
Black	42.7%
Hispanic	23.4%
Multiracial	4.6%
White	27.2%
English Language Learners	12.0%
Students with Disabilities	15.4%
Free or Reduced Lunch	82.9%

Due to the school's classification as a Provision 2 school under the National School Lunch Act, all students received free breakfast and lunch. The mobility rate at CES was about 30% based on the number of entries and withdrawals in 2014-2015. In addition, the school hosted emotional and behavioral disability students in a self-contained unit, serving approximately 15 students. In 2014, the school received a school grade of B.

CES students and teachers had access to two computer labs, each housing 30 Dell desktop computers running Windows 7. In January 2015, the district purchased one computer on

wheels laptop cart for the fifth grade students, which held 27 Lenovo ThinkPads running Windows 8. Each classroom at CES was equipped with a SMART board, SMART projector, audio enhancement system, and a teacher desktop computer. SMART boards are interactive whiteboards that are responsive to touch and SMART pens. SMART boards can be connected to a computer to project what is on the computer and include software allowing interactive presentations to be created and displayed in which users can write, drag, drop, and click on information included in the presentation. In addition, each classroom had three to five Dell desktop computers that were designated for student use throughout the school day.

My role as the literacy coach at CES uniquely positioned me within this research study. According to Herr and Anderson (2015), “The degree to which researchers position themselves as insiders or outsiders will determine how they frame epistemological, methodological, and ethical issues” (p. 30). As an insider working with other insiders within this organization, I was able to draw upon my deep-seated knowledge of the district, school, reading instructional context at the school, and teachers within the school to understand these issues and concepts at deeper levels. However, this was also a disadvantage because I had to be highly aware of my prior assumptions that may have been clouding my perception of the situation or issues at hand.

Key Stakeholders

Many stakeholders were affected by this problem. To begin with, the digital curriculum and instructional design team at the PCPS district office were central to effective integration of digital literacy skills. The role of this team was to (a) develop and provide professional development (PD) that supported teachers in effective technology integration and (b) work with schools to coach, model, and monitor effective technology integration practices. Support from

this team was provided on a limited basis, mainly to schools with a one-to-one device integration plan. Additionally, the team developed online modules to foster the digital literacy skills of students and help parents understand how to use the different tools provided to their family.

Principals and teachers were another group within PCPS and CES affected by this problem. Given that teachers lacked an understanding of digital literacy skills and for the most part were not prepared to engage in meaningful technology integration practices, teachers in all PCPS schools needed to learn about these skills and practices, preferably before technology integration occurred at their school. Different efforts, experiences, and support systems needed to be developed to change teachers' beliefs and perceptions regarding digital literacy skills. Teachers had to strategically shift their focus from a teacher-centered classroom to a student-centered classroom that engages deeply in content through research and discovery. Therefore, principals were affected, as they had to engage in these PD opportunities as well and allow and encourage their teachers to experiment and take risks as they worked towards meaningful technology integration.

Finally, students and parents were also affected by this problem. Students were not effectively prepared nor were they being prepared with the online reading and comprehension skills needed to compete in the 21st century (Wagner, 2008). Therefore, students were affected by this problem because they were not engaging in the thinking skills needed for efficient research and text processing required by digital literacy skills. As teachers shifted their instruction to more learner-centered environments, students were more actively engaged and self-directed in their own learning. In addition, parents were affected by this problem. As the world continually moves towards ubiquitous connectivity, parents, who may not be as

comfortable with technology, need to utilize digital devices to communicate with their students' teachers and check on their students' progress. PCPS has recognized this challenge and developed educational modules for parents.

Relationship to Other Organizational Problems

Finally, this problem was related to other problems within PCPS and CES. First and foremost, PCPS was faced with the challenge of creating assessments that mirrored the skills needed by 21st century learners. Leu et al. (2013) noted that assessments of online research and comprehension skills are needed to drive instruction in digital literacies. PCPS was faced with the task of developing end-of-course examinations for many courses in which students were enrolled. These assessments were paper/pencil, multiple-choice tests that had been developed by teams of teachers. However, these assessments did not inform instruction on digital literacy skills. Given that instruction is assessment driven, and assessment is instruction driven, these two problems were inherently related.

In addition, CES was an older school building that did not have the infrastructure to support a wide-scale digital device implementation. However, the school received a new main building in 2016, making this problem of significance only during this DiP.

History and Conceptualization of the Problem

National Context

Digital literacy is at the forefront of conversation nationally as research informs our understanding of digital literacies and policy decisions are made that drive state and district curriculum decisions. In a recent study, Leu et al. (2015) found that the reading achievement gap may be larger than originally thought when online research and comprehension skills are

included. In Leu's 2015 study, students in schools with different socioeconomic backgrounds were given a performance-based assessment designed to measure online research and comprehension skills. Overall findings indicated that all students performed at low levels. Students in the low socioeconomic category responded correctly only 21% of the time and students in the high socioeconomic category responded correctly only 50% of the time (Leu et al., 2015). These results are not promising unless changes are made in instructional decisions.

Recognizing that the Internet is critical to full civic and economic participation, the Obama Administration has several initiatives in place to inform Americans about the importance of digital literacy and provide efforts to close the digital divide. Started in July 2015, the ConnectHome initiative partnered Internet Service Providers, non-profit agencies, and private agencies to provide Internet access for disadvantaged families (The White House, Office of the Press Secretary, 2015a). To build knowledge of digital literacies skills, the Digital Literacy portal (<http://www.digitalliteracy.gov/>) was developed to provide practitioners with teaching and train-the-trainer resources for those offering digital literacy skills training within communities (National Telecommunications and Information Administration & U.S. Department of Commerce, n.d.). Finally, the recent TechHire initiative calls upon universities, community colleges, and nontraditional learning institutions (such as coding boot camps or those offering online courses) to provide Americans with rapid training that will prepare them for well-paying jobs in technology (The White House, Office of the Press Secretary, 2015b).

Overwhelmingly, the introduction of the CCSS has affected the context of education nationally. These new educational standards were written with a focus on college and career readiness and provide teachers with ambitious end-of-the-year standards that students should

achieve at each grade level, with the anchor standards providing the overarching goal. Consider the following anchor standard: “CCSS.ELA-LITERACY.CCRA.R.7-Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words” (NGA & CCSSO, 2010, p. 10). A clear connection can be made to the processing practices necessary for online research and comprehension; however, this connection is rather nuanced. Leu et al. (2015) drew an important conclusion as a result of their recent findings that the CCSS should be modified to more explicitly make online research and comprehension visible within the standards so that students are taught the skills and strategies needed to be successful.

Additionally, in 1998, the International Society for Technology in Education (ISTE) first published the National Educational Technology Standards [NETS] (Roblyer, 2000). These standards represented an important milestone because they were the first of their kind to define computer literacy skills and emphasize the need to prepare students with these skills (Roblyer, 2000). The NETS standards, revised in 2007, represent the most current technology standards published by ISTE to date (ISTE, 2015). Citing specific technology standards for students, teachers, administrators, coaches, and computer science educators, the NETS family of standards provides “clear guidelines for the skills, knowledge, and approaches they need to succeed in the digital age” (ISTE, 2015, para. 1). For example, the NETS standards for students (NETS-S) revolve around six overarching indicators: creativity and innovation, communication and collaboration, research and information fluency, critical thinking, problem solving, and decision making, digital citizenship, and technology operations and concepts (ISTE, 2007). The NETS standards for teachers (NETS-T) revolve around five related overarching indicators: facilitate and inspire student learning and creativity, design and develop digital age learning experiences

and assessments, model digital age work and learning, promote and model digital citizenship and responsibility, and engage in professional growth and leadership (ISTE, 2008). In response to the rapid developments in technology and education that have and continue to take place since 2007, ISTE is currently in the process of revising the NETS family of standards with an expected release date of June 2016 (Sykora, 2015).

State Context

Many states responded to the call for learning opportunities that incorporate the 21st century skills required of students to engage in the ever-changing digital landscape by enacting legislation requiring technology integration into schools (Digital Learning Now, 2014). Specifically, in Florida, state law mandated that by 2015-2016, 50% of each district's funding for instructional materials must be used to purchase digital materials. Florida also committed to online implementation of state assessments and mandated a high school graduation requirement of at least one fully online course (Digital Learning Now, 2014). In addition, Florida's Department of Education set a goal to ensure a one-to-one device for every K-12 student by 2017-2018.

District Context

PCPS was one of the largest school districts in the nation with nearly 200 schools serving over 190,000 students (PCPS, 2014a). To prepare to meet the mandates and effectively educate students for 21st century jobs and opportunities, PCPS initiated a one-to-one digital curriculum pilot program. In September 2012, the school board began researching digital curriculum and information on the "digital divide," then sent a digital team to visit schools that already included

technology into their curriculum regularly (PCPS, 2013-2014). Between April and July of 2013, the school board approved a two-year, one-to-one digital pilot program, announced it to the community, and created a director position to oversee the initiative, effective in the 2013-2014 school year (PCPS, 2014c). In January of 2014, the program expanded to include two elementary schools in a “Bring Your Own Device” pilot program in which students were invited to bring their personal laptops or tablets to school for integration into the curriculum (PCPS, 2014c).

In 2014, PCPS submitted a five year actionable Digital Classroom Plan (DCP) to the state of Florida which included goals, strategies, and timelines for an implementation plan that expanded on the lessons learned from the Digital Pilot Initiative (PCPS, 2014b). The district chose the Lenovo Thinkpad, running Windows 8.1, as the one-to-one device to be purchased for all students as they moved forward with the DCP. In 2015-2016, selected secondary schools implemented a one-to-one initiative with the remaining secondary schools participating in the one-to-one initiative the following year (2016-2017). Finally, between 2017-2019, the district plans to expand the one-to-one initiative to include all elementary schools (PCPS, 2014b). The purpose of the one-to-one digital classroom program was to “assist schools in the implementation of digital learning by increasing infrastructure readiness for next generation curriculum and assessments and increasing readiness for next generation instruction” (PCPS, n.d., para. 3).

If one walked into a digital pilot school within PCPS, he or she would see much instruction that translates paper-based practices into digital formats as opposed to transforming learning with the technology, much like in the anecdote with Elise. Significant amounts of PD

opportunities and supports were provided to the teachers at these schools. However, those opportunities mostly focused on how to use certain programs such as Edmodo, Safari Montage, and Google Apps for Educators (Van Allen, 2014).

School Context

If one had walked into a classroom at CES (not part of the digital pilot program), the results would have been even less focused on authentic technology use. Close examination of teachers' lesson plans indicated that teachers asked students to visit websites to obtain information on a given topic yet were not teaching students search strategies or working with students to examine sources for credibility. Student work showed that students were summarizing the main points of a variety of Internet sources without crosschecking information and frequently included conflicting information in their assignments. These pieces of evidence made it apparent that teachers were not adequately teaching the digital literacy skills that would prepare students for online research and comprehension.

Factors Impacting the Problem

As with any complex problem of practice, CES's problem of ineffective efforts to incorporate scaffolded online research and comprehension skills within the guided reading framework in intermediate grades stemmed from many possible causes and factors. A summary of these causes and factors is presented in Table 2 and are fully described in this section.

Table 2

Summary of Causes and Factors Impacting the Problem

Lenses	Possible Causes and Factors
Student Learning	Students lacked basic computing skills.
Teacher Learning	Teachers saw technology as an addition to instruction, rather than redefining instructional practices. Teachers lacked classroom management strategies when using technology.
Motivational	Teachers did not believe that the school or district values the initiative. Teachers did not believe that technology integration is important. Teachers lacked self-efficacy in their own technology usage.
Structural	Lacked time to plan for technology integration. Device compatibility issues. Lacked resources on the technology. Goals of the district and school did not align.
Human Resource	Lacked professional development on how to effectively integrate technology. Teachers did not feel supported.
Political	Lacked technology, access to apps, resources, and timely technical support. Teachers did not value technology integration.
Symbolic	Teacher mindsets about the symbol of a book. Lacked a common vision about digital literacy .

Learning Lens

One of the biggest frustrations for teachers was the students' lack of basic computing skills. Therefore, teachers shied away from incorporating online research and comprehension skills into the curriculum. For example, teaching young students how to log in to the computer was a tedious and time-consuming task, especially for the youngest students who were just

learning their letters and numbers (Hutchison & Reinking, 2011; Van Allen, 2014). Older students' keyboarding skills were often lacking, resulting in labored typing, increased time spent on computer tasks and serving as a deterrent for many teachers because of the amount of content they had to teach (Hew & Brush, 2007).

Transformed teaching and learning makes use of challenges, creativity, exploration, choice, collaboration, and active student engagement with online research integrated as a tool for discovering and expressing ideas (Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012). One cause of the problem at CES was that teachers saw technology as an addition to instruction rather than redefining instructional practices. Teachers used technology (e.g., PowerPoint presentations and interactive whiteboard lessons) to teach ideas and concepts via traditional methods, much like a chalkboard was used in the past. One director at PCPS noted, "We are trying to translate paper-based practices into digital where there's probably a better way to do that" (personal communication, July 24, 2014). Therefore, it is clear that teachers lacked pedagogical knowledge to successfully integrate online research and comprehension into instruction.

Another factor that contributed to the problem was that teachers lacked technology-related classroom management skills (Hew & Brush, 2007; Van Allen, 2014). In one digital pilot school within PCPS, the principal indicated that it was easy to see which classrooms had clear procedures and expectations for using the devices during instruction, identifying classroom management strategies specific to technology use as integral to effective technology integration (Van Allen, 2014). Given the extensive information, entertainment, and advertisements available on the Internet, it is easy for students to stray from the task assigned by the teacher

(Coiro & Dobler, 2007; Fabos, 2008). Thus, in addition to traditional classroom management strategies, the teacher must establish additional guidelines, procedures, and expectations for students' use of technology (Hew & Brush, 2007). Teachers at CES had little experience teaching with technology and, therefore, struggled to manage students as they navigated online environments.

Motivational Lens

Teacher beliefs and attitudes about technology integration have a great effect on the amount of instructional time devoted to digital literacy skills (Hutchinson & Reinking, 2011; Straub, 2009). The expectancy theory of motivation explains why individuals choose one behavior over another based on their perceptions of the outcome of their behaviors (Vroom, 1964). Teachers must perceive that the school and school district value instruction in online research and comprehension skills and show flexibility and support as teachers experiment with instructional techniques. Otherwise, teachers are not as likely to value technology integration and will lack motivation to teach students the skills necessary for future success. (Hutchison & Reinking, 2011; Straub, 2009).

In addition, teachers' attitudes and beliefs toward using technology also acted as a barrier to the inclusion of online research and comprehension in instruction. Hew and Brush (2007) conducted a literature review on the barriers to technology integration and found that teachers' attitudes and beliefs were directly related to the frequency and type of instruction provided using technology. Some teachers are intimidated by technology, believing that they lack the skills necessary to successfully integrate technology into their curriculum (Ertmer et al., 2012). In another study, teachers who had a positive attitude towards technology and believed that

technology usage in the classroom improved student learning were more likely to engage in classroom practices that included technology usage as a learning tool (Ertmer et al., 2012).

Self-efficacy Lens

Another factor related to teachers' inclusion of technology was self-efficacy. According to Bandura (1986), people's behaviors are driven by their perceptions of their self-efficacy, rather than their actual abilities. Teachers' prior experiences affect their Internet self-efficacy which, in turn, affects the amount and type of Internet learning experiences that they provide to students (Pan & Franklin, 2011; Wu & Wang, 2015). Teachers' Internet self-efficacy remains a topic that has been relatively unexplored by researchers. However Pan and Franklin (2011) found, in their survey, that a sample of United States' kindergarten through 12th-grade teachers' self-efficacy was a primary predictor of Web 2.0 tools integration in classroom instruction. In addition, Wu and Wang examined the Internet self-efficacy of elementary teachers in China and found that these teachers had higher confidence and expectations when using the Internet for basic purposes. Those teachers who indicated that they used elaborate search strategies and evaluative standards of experts when viewing websites had a greater Internet self-efficacy (Wu & Wang, 2015). According to a previous technology support representative in PCPS, teachers often requested help for basic computing skills, frequently stating that they were just not good with computers (personal communication, June 6, 2015). Many CES teachers did not believe that the Internet was an integral learning tool, had limited self-efficacy with using technology, and lacked motivation to teach online research and comprehension skills because they did not perceive that it was valued by the school administration.

Structural Lens

Organizational structures were another complex factor contributing to the problem. Bolman and Deal (2013) stated that the structural design of an organization is based on how work is allocated and how efforts are coordinated to achieve a common goal. School administrators at CES were tasked with ensuring that the school's structure matched its goals and those of the district. However, the goals of the district did not necessarily align with the goals of the school. According to the district director of the Digital Curriculum and Instructional Design Department at PCPS, the goal of the digital curriculum initiative within PCPS was:

to increase readiness in terms of infrastructure for next generation assessments and increase readiness in terms of instructional design for next generation standards and assessments . . . to increase student achievement on those assessments by creating a high engagement classroom. (personal communication, July 24, 2014)

The goals of CES were to increase student achievement on the current standardized assessments that were typically administered by paper and pencil. These tests did not assess skills associated with online research and comprehension.

In addition, the district held tight control over the types of digital devices allowed in schools and the applications that were installed on those devices. The district director indicated that the schools “don’t have complete control over what they are choosing to do” because the district manages the devices (Van Allen, 2014, p. 20). Teachers did not have access to adding applications to the devices and had to go through a long, arduous process (three weeks or longer) to add applications because of the logistics involved on the back end of the technology (Van Allen, 2014). Other researchers have found that districts often block access to many sites such as

YouTube, blogs, and games. This limits resources available to both students and teachers alike (Levin & Arafeh, 2002). The lack of resources available on the devices led to decreased possibilities for technology integration in the classroom and decreased motivation by teachers to design lessons around technology. In addition, teachers often faced device compatibility challenges with programs that the district installed on the devices. For example, the laptop cart delivered to CES in January 2015 would not open the Windows applications installed on the devices, such as the Quick Response Code (QR) reader because of compatibility issues, which were not resolved by the district until late May 2015. One teacher's frustration was evident when she stated, "We would go to all of these trainings on these amazing programs, and the kids would try to open it and it wouldn't work . . . it was kind of disheartening" (Van Allen, 2014, p. 23). One major structural challenge in organizations is balancing the amount of control so structures are in place to hold the organization together without stifling stakeholders' flexibility and creativity (Bolman & Deal, 2013). PCPS's top-down structure clearly stifled teachers' flexibility and creativity through their tight control of the technology and resources on the technology afforded to schools.

Furthermore, researchers have shown that lack of time to plan for integrating technology into instruction is a great barrier (Hutchison & Reinking, 2011). In a teacher survey, An and Reigeluth (2011-2012) found that 57% of teachers stated that lack of technology and time were major barriers. During the initial digital pilot initiative within PCPS, a principal indicated that teachers spent many more hours planning for instruction using the technology than traditional instruction (Van Allen, 2014). Specifically, instruction in online research and comprehension skills takes much planning as teachers find appropriate Internet sources for students and evaluate

those sources (Karchmer, 2008/2001). However, the structure of the school day at CES provided teachers with limited sustained time to plan for instruction that integrated online research and comprehension skills, especially when considering the numerous district and school requirements in place for documenting student progress and general lesson planning.

Human Resource Lens

Overwhelmingly, researchers have cited lack of teacher knowledge as a major barrier to technology integration (Hew & Brush, 2007; Hutchison, 2012; Hutchison & Reinking, 2011). As noted by Bolman and Deal (2013), “Undertrained workers harm organizations” (p. 146). Although the district provided the digital pilot schools with significant opportunities for PD, schools not part of the digital pilot initiative, (e.g., CES), received little to no opportunities for PD on technology integration. For example, in 2014-2015, all teachers at CES received a full day training on how to implement a computer-assisted instructional program and a half-day training on how to pull reports and analyze data within the program. The fifth-grade teachers at CES received an additional one-hour training on how to use the computer on wheels laptop cart and skills needed by 21st century learners. However, these were the only PD opportunities provided to teachers related to technology integration. Investing in employees by building human capital through mentors and collaboration with other employees on the job as well as in sit down training sessions is vital for an organization’s success when viewed from a human resources perspective (Bolman & Deal, 2013). Researchers have shown that teacher preparation programs and professional in-service programs do not successfully build teachers’ pedagogical knowledge of effective technology integration, as they typically focus on how to use programs and offer ideas for integrating particular programs into instruction as opposed to integration of

specific instructional approaches using technology (Ertmer et al., 2012; Hew & Brush, 2007; Hutchison, 2012; Hutchison & Reinking, 2011; Van Allen, 2014). The lack of PD for CES teachers on the skills and knowledge needed by students and ways to effectively integrate online research and comprehension skills into instruction was problematic.

Along with the lack of PD, teachers did not believe they were supported as they integrated technology into instruction. Providing employees with information, support, and encouraging autonomy and participation among employees builds a culture of learning and ownership within the organization (Bolman & Deal, 2013). However, teachers at CES did not believe they received adequate information or support on technology integration. Additionally, teachers often had to wait up to a month for technology repairs and, due to budget constraints, sometimes did not receive a replacement computer when a computer became inoperable. Finally, although collaboration between teachers was encouraged, teachers were rarely encouraged to collaborate on technology integration practices because of the intense focus on lesson planning and data analysis for increased achievement on high-stakes assessments. These concerns are corroborated by survey research that shows technology integration is not emphasized and little support is provided to teachers by school leadership across the nation (Hutchison & Reinking, 2011).

Political Lens

Political processes are inherently at work in any organization with individuals and groups competing for scarce resources (Bolman & Deal, 2013). Schools, especially schools with high numbers of students with low socioeconomic status, receive limited funding and resources. CES was one such school that had to carefully allocate resources based on needs and goals.

Consequently, teachers at CES lacked access to technology, a wide variety of applications and resources for technology, and timely technical support. The technology support representative at CES was shared with another school in the area, greatly limiting the amount of technology support provided to teachers at the school. Hew and Brush (2007) found that “Employing a limited number of technical support personnel in a school setting severely hinders teachers’ use of technology” (p. 227). When technology failed, technical assistance was limited. When a device became inoperable, the device may not have been replaced due to limited funding. Finally, because the district controlled the applications and programs allowed on devices, teachers had limited access to a variety of resources. Therefore, the scarce resources available to teachers at CES regarding technology were a contributing cause of the problem.

Ultimately, it is the role of the teacher to decide what to teach and how to teach the standards and curriculum. The political arena of the school is a fine balance between the school leadership and teachers (Bolman & Deal, 2013). Teachers at CES did not value technology integration, and this contributed to the complex problem. Given the immense pressure to improve student performance on the state test, teachers placed more emphasis on the skills that were assessed on these tests (Hew & Brush, 2007). Though the school leadership encouraged innovative use of technology, online research and comprehension skills were not directly assessed on the state assessment. This made it a low priority for teachers and resulted in limited instruction in those skills.

Symbolic Lens

Historically, the idea of a book is a symbol for learning and wisdom (de Kermadec, 2013). Therefore, the symbol of turning pages in a book and teaching students to read with print

is a mindset that is hard to change. The symbol of a book as an artifact of learning poses a challenge to teachers' mindsets and consequently has great implications for the integration of online research and comprehension skills in instruction. During interviews with PCPS employees on the use of digital devices in a one-to-one digital pilot initiative, a principal stated, "The teacher really wants to read out of a book and give the children (print) books to read," (Van Allen, 2014, p. 26); and a teacher stated, "I think students still need to practice those handheld skills like flipping the pages. . . reading the back cover. . . just the basic fundamentals of book handling skills" (Van Allen, 2014, p. 26). These statements showed the power of the symbol of a book and its importance to teachers within PCPS. In addition, there was a lack of shared vision about digital literacy. Bolman and Deal (2013) proffered that "a vision offers mental pictures linking historical legend and core precepts to future events" (p. 250). Teachers at CES did not have a clear vision of what digital literacy was or what digital literacy looked like in practice.

An Educative Curriculum for Online Research and Comprehension Skills

Efforts to incorporate scaffolded instruction in online research and comprehension skills in intermediate classrooms at CES had been nonexistent. An analysis of research indicated that this problem was more widespread across the state and nation due to many mitigating factors (An & Reigeluth, 2011-2012; Greenhow et al., 2009; Hutchison & Reinking, 2011; Leu et al., 2015). Although many of these factors were organizational problems that had to be addressed by the schools, district, and state policy, one of the greatest factors was that CES teachers did not possess the knowledge and skills to effectively address online research and comprehension skills in the intermediate grades (Hutchison, 2012; Hutchison & Reinking, 2011). Even if the organizational causes, (e.g., access to technology), of this complex problem of practice were

addressed by schools, districts, and state policy, teachers were still unable to have a positive effect on student achievement in these skills without being provided with proper training and resources that supported teacher knowledge.

Teachers in all grade levels and content areas use curriculum materials daily to drive classroom instruction and address appropriate content. Ball and Cohen (1996) were the first to acknowledge the gap between the design of curriculum materials and teachers' enactment of the materials, proposing that curriculum materials be improved to aid teacher learning. According to Davis and Krajcik (2005), "Teacher learning is situated in teachers' practices" (p. 3), meaning that teachers are continually building knowledge as they plan and implement lessons, assess student learning, collaborate with colleagues, and communicate with parents. Therefore, teachers are constantly developing and integrating their knowledge about content and pedagogy and applying their knowledge to make professional decisions about how to implement curriculum and curriculum materials. Teachers rely on their goals, beliefs about students and learning, existing knowledge of subject matter, and existing knowledge about instructional approaches to make these decisions, known as pedagogical design capacity (Brown, 2009).

Educative curriculum materials have been proposed as one way to provide "just in time learning" for teachers as they build and integrate their knowledge of new and existing content and pedagogical practices (Davis & Krajcik, 2005; Davis et al., 2014). Schneider (2013) conducted a case study on one teacher's implementation of an educative science curriculum formed around inquiry-based science techniques and found that the curriculum greatly assisted in the teacher's knowledge development of inquiry practices as she interacted with the curriculum materials and students. In addition, Drake, Land, & Tyminski (2014) proposed the incorporation

of educative curriculum materials into teacher preparation programs to increase prospective teacher's knowledge of curriculum materials, content knowledge, and pedagogical approaches simultaneously. According to Davis and Krajcik (2005), "educative materials should help to increase teachers' knowledge in specific instances of instructional decision making but also help them develop more general knowledge that they can apply flexibly in new situations" (p. 3) through educative features added to a base curriculum.

This design project developed teacher and student knowledge at CES simultaneously in an educative curriculum unit that introduced online research and comprehension skills to be used with intermediate students (fourth- and fifth-grade). The educative curriculum developed supports teachers in instructional decision-making as they apply technological knowledge, content knowledge, and pedagogical knowledge to implement the educative curriculum materials and build students' ability to understand and generate research questions, locate, critically evaluate, and synthesize information.

Design Specifications

Design specifications for functionality and usability are outlined in Table 3. These specifications were broad guidelines that guided the development of the base curriculum and educative features. Supporting research for the development of student and teacher objectives are further described in this section.

Student Objectives

Students' development of offline reading strategies alone are not enough to sufficiently comprehend Internet texts which take a variety of forms including audio, video, hyperlinks, and

images and may support or mislead readers as they navigate their own multimodal reading path (Afflerbach & Cho, 2010; Castek, 2008; Coiro & Dobler, 2007; Leu et al., 2008; Leu et al., 2013). Although all readers must decode unknown words and use vocabulary strategies to determine the meaning of unknown words, strategic online readers must extend the application of offline strategies in many complex ways (Coiro & Dobler, 2007; Rowsell & Burke, 2009). For example, traditional reading strategies for reading offline informational texts include activating prior knowledge, making inferences, and self-regulating reading practices (Afflerbach & Cho, 2010; Coiro & Dobler, 2007). Online readers must have additional prior knowledge of basic computing skills, website structures, and search engines in order to efficiently search for and locate Internet texts (Coiro & Dobler, 2007; Leu et al., 2008). Furthermore, online readers must constantly make forward inferences to determine which hyperlinks may hold relevant information on their topic under research and manage multilayered reading processes (through navigation of hyperlinks in self-chosen nonlinear reading paths) across multidimensional Internet spaces (involving multiple types of text forms) (Coiro, 2003; Coiro & Dobler, 2007).

Table 3

Design Specifications

Functionality		
Educative for students: <ul style="list-style-type: none"> • Teach students basic strategies and skills for online research and comprehension. 	Guiding literature: <ul style="list-style-type: none"> • Understanding by Design (UbD) for base curriculum • Lowercase new literacies theory • Online research and comprehension instructional approaches 	Curriculum connection: <ul style="list-style-type: none"> • Align to Language Arts Florida Standards • Align to ISTE-S Standards
Educative for teachers: <ul style="list-style-type: none"> • Educate teachers on the strategies and skills students need for online research and comprehension and the theories underlying these skills. • Educate teachers with the pedagogical, content, and technological knowledge they need to facilitate instruction in online research and comprehension skills. 	Guiding literature: <ul style="list-style-type: none"> • Educative Curriculum features • Technological, Pedagogical Content (TPACK) Framework 	Curriculum connection: <ul style="list-style-type: none"> • Rationales for teaching skills/strategies • Content boxes highlighting important background information • Practice descriptions • Narratives of classroom practice • Videos of students demonstrating skills • Assessment features • Align to ISTE-T Standards
Usability		
Ease of Use	Guiding literature: <ul style="list-style-type: none"> • Principles of design 	Curriculum connection: <ul style="list-style-type: none"> • Unit concept map • Predictable format
Adaptability	Guiding literature: <ul style="list-style-type: none"> • Guided reading framework 	Curriculum connection: <ul style="list-style-type: none"> • Scaffolding support for different learners • Differentiation recommendations

Affective variables, such as motivation, self-efficacy, attitude, and interest, or readers' dispositions, also have an effect on students' comprehension and strategy usage within

traditional texts (Wigfield, Guthrie, Tonks, & Perencevich, 2004). Students with positive reading dispositions are more likely to persevere through challenging reading tasks, have higher reading stamina, and effectively use self-regulation strategies when reading (Wigfield et al., 2004). Consequently, positive or negative dispositions toward online research and reading tasks and the Internet have an effect on online research and comprehension skills of students (Coiro, 2012). For example, students' attitudes toward the Web influence their search strategies and involvement with online texts (Kuiper & Volman, 2008). However, little research has been conducted on understanding and developing students' dispositions toward reading on the Internet.

Two instruments have been developed for measuring students' dispositions to online tasks (O'Byrne & McVerry, 2009; Putman, 2014). O'Byrne and McVerry (2009) defined dispositions as "a pattern of behaviors, situated in the context of the environment, that when recognized and developed . . . may lead to gains in the acquisition of knowledge, skills, and understandings" (p. 364). Therefore, these researchers developed the Disposition of Online Reading Comprehension instrument to measure students' persistence, flexibility, collaboration, reflection, and critical stance and administered the instrument to a convenience sample of 1,276 seventh- and eighth-grade students participating in a one-to-one laptop initiative (O'Byrne & McVerry, 2009). Three factors were found to be significant in developing students' dispositions of online reading: reflection, persistence, and collaboration (O'Byrne & McVerry, 2009). Building on this work, Putman (2014) developed and piloted the Survey of Online Attitudes and Behaviors and Skills with 1,068 fifth- and sixth-grade students examining self-efficacy, motivation, interest, anxiety, and self-regulatory practices of these students in relation to online

research. Both of these tools could be used to determine students' dispositions towards online tasks, which may greatly enhance or inhibit student use of skills and strategies for online research and comprehension skills. These tools were included as a resource within the educative curriculum. However, in both studies, the researchers noted that more research is needed to further validate the results of these instruments (O'Byrne & McVerry, 2009; Putman, 2014).

Much research verified the use of five key strategies that support the skills, knowledge, and dispositions necessary for online research and comprehension: (a) identifying research questions or a problem; (b) searching for and locating information; (c) critically evaluating information; (d) synthesizing information; and (e) communicating information (Castek, Zawilinski, McVerry, O'Byrne, & Leu, 2011; Coiro & Dobler, 2007; Leu et al., 2008; Leu et al., 2013; Kuiper & Volman, 2008; Zhang & Duke, 2008). These strategies served as the basis of the student objectives in the introductory educative curriculum materials with the main focus on identifying questions, locating information, critically evaluating information, and synthesizing information.

Identifying a Question/Problem

Setting a purpose for reading has been widely acknowledged by literacy education professionals as a strategy that directs readers' attention while reading to improve comprehension. It also acts as a motivator by providing the reader with a goal to work towards while reading (Blanton, Wood, & Moorman, 1990). Leu et al. (2008) explained that "online reading comprehension always begins with a question or problem" (p. 323) which sets the purpose for reading online. Without a clear and direct purpose, students may be easily distracted and overwhelmed by the abundance of information available online and spend endless hours

fruitlessly searching for information (Eagleton & Dobler, 2015; Henry, 2006). Eagleton and Dobler identified questioning as the first step to online research, leading to more effective key word generation and a clear plan for finding information on the Internet.

Locating Information

Perhaps one of the biggest gatekeepers to effective online research and comprehension is locating information effectively and efficiently. Previous researchers have found that readers, flexibly engaged in multiple strategies as they read traditional texts, access prior knowledge as they monitor, make connections, and build their schema of the topic (Afflerbach & Cho, 2010). Current researchers (Coiro, 2011; Coiro & Dobler, 2007; Cromley & Azevedo, 2009) also indicated that use of prior knowledge sources could serve as a predictor of online reading comprehension. In a stratified, random sampling of seventh-grade students in the northeastern United States, Coiro (2011) found that topic-specific prior knowledge influenced less-skilled online readers, but had no effect on more skilled online readers. In addition, struggling readers who were highly skilled online readers were able to more efficiently locate relevant information they needed to complete an Internet task (Coiro, 2011). Cromley and Azevedo (2009) examined how prior knowledge affected middle school through undergraduate students' Internet search skills in a hypermedia environment (an DVD-based encyclopedia). Across all age groups, prior knowledge was significantly correlated to quicker discovery of the key pages that answered the researcher created questions (Cromley & Azevedo, 2009). Students must learn how to use their prior knowledge to generate key words, scan search results for relevance, and skim webpages to locate pertinent information related to their identified questions (Henry, 2006). In addition, providing students with knowledge of search tools, their functions and features, and when and

how to use different search tools equips students with the appropriate tools to effectively and efficiently locate information online (Eagleton & Dobler, 2015).

Critically Evaluating Information

After students search for and locate information relevant to identified questions or a problem, they must be able to critically evaluate the resources for validity, reliability, and bias (Coiro, 2003). “Critically evaluating information includes the ability to read and evaluate the level of accuracy, reliability, and bias of information” (Leu et al., 2013, p. 1165). This type of close reading is a key goal of the CCSS, an important skill when reading traditional text, and essential when reading online texts. These texts are not regulated for quality and accuracy, placing the burden of judging the accuracy and reliability of the information on the reader. Additionally, the multiple media formats in which information is presented in online texts and creative integration of commercial marketing in online environments further complicates the matter (Eagleton & Dobler, 2015). Researchers have indicated that students often struggle to critically evaluate online texts for accuracy, bias, credibility, and reliability (Leu et al., 2007; Kiili, Laurinen, & Marttunen, 2008). For example, Kiili et al. (2008) found that upper secondary students were more likely to evaluate online texts for relevance much more frequently than they evaluated content for credibility. In another study, Leu et al. (2007) found that only four students of 50 were able to identify a hoax website even though they reported that the Internet does not always provide accurate information. Students must take a critical stance towards online texts, continually questioning the information for reliability and accuracy, reading to infer the author’s stance and examine the possibility of bias, cross-checking information with other sources as they read (Leu et al., 2014).

Synthesizing Information

In order to fully develop an understanding of a concept or idea, readers must synthesize information from multiple points in one text and across multiple sources (Eagleton & Dobler, 2015). Online text complicates readers' integration of ideas because readers must navigate between multiple sources in multiple forms as they actively construct their own reading path, as opposed to the linear, hierarchical reading paths created by authors of traditional texts (Coiro & Dobler, 2007; Leu et al., 2007). Often students stop reading, without making meaning from multiple online sources, after they locate the one webpage that seems to have the answers to their questions (Coiro & Dobler, 2007; Ladbrook & Probert, 2011). As well, through observations of students' online reading behaviors, Guinee and Eagleton (2006) found that many students struggle to synthesize online information.

Communicating Information

Finally, though not an explicit, key objective of this introductory curriculum, communicating information is a key component of online research and comprehension. Reading and writing are interactive processes that often happen simultaneously when pouring through online texts. Furthermore, varying communication tools on the Internet, such as email, blogs, and wikis, require different skills, knowledge, and social practices to successfully communicate with others (Leu et al., 2013). When communicating information, elementary students often copy information directly from the online source rather than transforming the synthesized information into original work (Eagleton & Dobler, 2015; Guinee & Eagleton, 2006). Most students lack strategies for appropriately communicating new information to others and must be explicitly taught these skills. This curriculum focused on note-taking strategies to guide student

as they organized important, relevant, and accurate information from multiple sources to build their understanding of a concept or idea.

In a large scale study, the Teaching Internet Comprehension to Adolescents (TICA) project, a checklist of online research and comprehension skills was developed in two phases of instruction (Leu et al., 2008). The phase one checklist identified foundational skills and strategies, such as computer, web searching, and general navigation basic skills. Most of the students at CES were familiar with computer basics such as turning the computer on, logging in, and opening applications; consequently, these skills were not addressed. However, many students lacked knowledge of web searching skills and vocabulary which were addressed through the curriculum. The phase two checklist included the aforementioned key strategies necessary for online research and comprehension (Leu et al., 2008). Based on the research provided in this section and the TICA checklist, the following student objectives guided the development of the base curriculum unit:

- Students will develop knowledge of basic web searching skills.
- Students will understand and research questions or problems.
- Students will effectively locate information using search engines and web text structures.
- Students will critically evaluate Internet information for bias, author's stance, reliability, and accuracy.
- Students will utilize note-taking strategies to synthesize information within and across web sources.

Teacher Objectives

Ladbrook and Probert (2011) noted that teachers themselves lacked appropriate skills with information and communication technologies and found that teachers believed students were more adept at technology than their teachers. Considering that “teachers’ realities of reading and writing may greatly affect how the Internet influences literacy and literacy instruction” (Karchmer, 2008/2001, p. 1273) in their classrooms, teachers who lacked personal online research and comprehension skills were unlikely to include these skills in their instruction. Stolle (2008) examined how a group of teachers’ views about technology integration affected their instructional practices and noted, “Teachers are limited in their ability to envision beyond what they already know and do” (p. 315). If teachers are required to more effectively integrate online research and comprehension into their instruction, they must also become more proficient at these skills in their own personal lives.

Another important finding was teachers’ belief that they lack appropriate knowledge of how to incorporate technology into instruction (Hutchison & Reinking, 2011; Pan & Franklin, 2011; Stolle, 2008). In fact, many researchers noted that teachers were calling for PD that addressed the pedagogy of teaching with technology (An & Reigeluth, 2011-2012; Hutchison, 2012; Hutchison & Reinking, 2011; Stolle, 2008; Van Allen, 2014). Although Hutchison (2012) noted that the quantity of teacher PD opportunities on technology integration has increased, Lawless and Pellegrino (2007) stated that this PD was driven by a need for action but uninformed by research on best practices. Teachers want and need more PD on technology integration that provides on-going support, multiple exposures to content, time to explore,

practice and prepare content, is timely, provides access to models of instruction occurring, and provides appropriate background knowledge (Hutchison, 2012).

Educative Features

Although most research and development of educative materials design has been conducted on science and mathematics content, design heuristics and a design process for educative curriculum have been recommended (Davis & Krajcik, 2005; Davis et al., 2014). To begin with, a central element of educative curriculum materials is a base curriculum that includes accurate, complete, and coherent content and effective pedagogy which is addressed within the student objectives in this project (Davis & Krajcik, 2005). Next, educative features for teachers focused on three components (instructional approaches, rationales, and recommendations for strategy use) should be added to the base curriculum to support teacher knowledge and teacher learning by connecting theory to practice. These components should:

- help teachers learn how to anticipate and interpret what learners may think about or do in response to instructional activities
- support teachers' learning of subject matter by addressing facts and concepts within a subject as well as disciplinary practices
- help teachers consider ways to relate units
- make visible the developers' pedagogical judgments
- promote a teacher's pedagogical design capacity (Davis & Krajcik, 2005, p. 5).

I addressed these components through a variety of supports within the educative curriculum. Davis et al. (2014) created five types of educative features for a science curriculum based on design decisions driven by theory and empirical evidence: content support features,

support for science practices, narratives, support for literacy practices, and support for assessment practices. A unit concept map situated the unit content within the broader vision of content knowledge. A content storyline at the beginning of each lesson supported teachers in identifying the big ideas. Content boxes signaled important content and additional background information for teachers. A scientific practice overview page introduced each science practice and the why/how. Reminder boxes with visuals referred teachers to these practices and served as a reminder to use the specified practice in that section of the lesson. Narratives provided a model and showed teachers how to unfold and adapt the lesson for their students. Assessment features provided rubrics and sample student work that helped teachers identify student knowledge and provide feedback to students (Davis et al., 2014).

Based on the aforementioned research, the following teacher objectives were used to guide the design of the educative features of the curriculum:

- Teachers will develop their own abilities with online research and comprehension skills.
- Teachers will understand the skills, strategies, and dispositions needed by students to engage in online research and comprehension and common misconceptions of students.
- Teachers will identify instructional strategies and approaches for teaching students how to understand and generate questions/problems, search for and locate information, critically evaluate and synthesize information, and note-taking strategies for online texts.

- Teachers will learn how to evaluate and respond to students' progress with online research and comprehension skills.

Frameworks and Approaches Driving the Design

Theoretical Frameworks

The theoretical frameworks that guided the design of the educative curriculum unit were New Literacies Theory (Leu et al., 2013) to inform the design of the student and teacher objectives and the Technological Pedagogical Content Knowledge model [TPACK] (Mishra & Koehler, 2006) to inform the educative features for teacher objectives. In addition, the guided reading framework proposed by Fountas and Pinnell (2012) was used as the structure for instruction on which the curriculum was built.

New Literacies Theory

Rapidly developing multimodal texts and new technologies have continually shifted the way we define literacy and results in the development of specialized discourses, social practices, and skills within each new technology and/or text type (Leu et al., 2013). In order to account for and explain the ever-changing nature of these new literacies, Leu et al. (2013) proposed a dual level theory, Uppercase New Literacies Theory and lowercase new literacies theory. Lowercase new literacies theory studies new technologies, programs, and text types and examines the knowledge, skills, and dispositions that surround these specific areas of new literacies. Therefore, lowercase new literacies are endlessly changing and growing in response to the shifting landscape of technology. Lowercase new literacies theory is informed by the broad “common and consistent patterns begin found in lowercase literacies and lines of research” (Leu

et al., 2013, p. 1157) of uppercase New Literacies theory. The common assumptions and principles of uppercase New Literacies theory guide the understanding of how these new literacies are altering our worldview and how we educate students in today's world. The following principles of uppercase New Literacies theory were directly related to this study:

- The Internet is this generation's defining technology for literacy and learning within our global community.
- The Internet and related technologies require new literacies to fully access their potential.
- New forms of strategic knowledge are required with new literacies.
- Teachers become more important, though their role changes, within new literacy classrooms. (Leu et al., 2013, p. 1158)

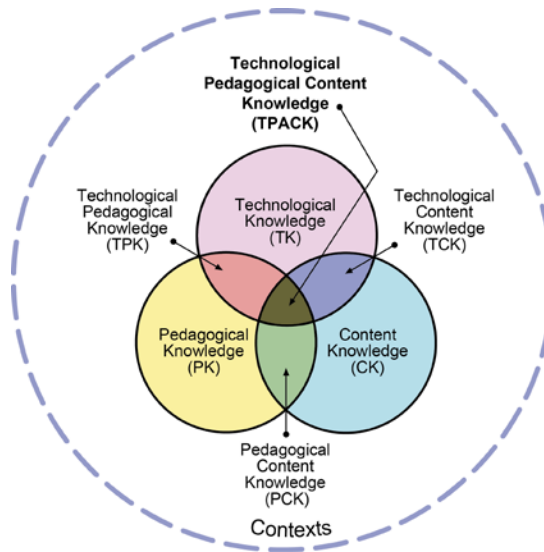
Although uppercase New Literacies theory helps educators understand the way that online research and comprehension skills are changing instructional approaches and content taught, lowercase new literacies theory helps educators understand the attributes of online research and comprehension skills that need to be taught to students directly or indirectly.

Specifically, in this study, the lowercase new literacies of online research and comprehension were explored. Leu et al. (2013) have identified key aspects of online research and comprehension that may be used to inform teaching and learning within this lowercase new literacy. One of the most important elements is the understanding that each individual reader self-directs his or her construction of knowledge through online texts. No two readers will follow the same exact pattern of hyperlinked text as they inform their understanding of a topic or problem, making text construction a unique and self-directed process. Next, readers must utilize

five strategic processes, as previously identified, to make sense of and comprehend online texts. Furthermore, online comprehension skills and strategies require the activation of traditional reading skills and strategies, yet expand and build upon them in complex ways, ensuring that online reading comprehension is not isomorphic with offline reading comprehension. Therefore, these skills and strategies must be directly taught to students in collaborative environments to improve students' comprehension of and learning through online texts. Finally, it should be noted that many online texts are supportive of struggling readers because they are typically shorter in length and provide multimedia elements that further explain the concept or topic addressed in the text content (Leu et al., 2013).

Technological Pedagogical Content Knowledge Model (TPACK)

Incorporating technology into instruction in meaningful ways does not happen by simply equipping classrooms with computers or other devices. The TPACK model, shown in Figure 1 and developed by Mishra and Koehler (2006), illustrates the complexities and forward thinking involved in the successful integration of technology into curriculum and instruction.



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Figure 1. Technological Pedagogical Content Knowledge Model (TPACK)

The TPACK model was developed from the pedagogical content model originally conceptualized by Shulman (1986) and examines teacher decisions regarding the intersection of a teacher's technological knowledge, content knowledge, and pedagogical knowledge (Mishra & Koehler, 2006). The authors of TPACK posited that teachers must first consider their content and then merge effective instructional methods for teaching that content with technology to plan meaningful learning experiences and make effective teaching decisions (Mishra & Koehler, 2006). Thus, teachers must have technological knowledge of how to work the devices, how to troubleshoot device issues, how to navigate application or program, and other general knowledge about the devices (Mishra & Koehler, 2006). The TPACK model provided a lens through which to view the instructional decisions teachers faced as they integrated online research and comprehension skills into instruction.

Guided Reading

Dating back to Betts' Directed Reading Activity (as cited in Ford & Opitz, 2011), the guided reading framework is one of the most widely used frameworks for small group reading instruction (Ford & Opitz, 2011). Betts' Directed Reading Activity was originally designed to teach students how to use reading strategies through targeted guidance by the teacher when reading unknown texts (Ford & Opitz, 2011). This was the first recognition of the need to guide students through strategic reading of texts, and it has since been revised in response to reading research and educators' needs. The current, widely popular version of the framework was designed by Fountas and Pinnell (2001) in order "to help students build their reading power—to build a network of strategic actions for processing texts" (p. 272). Many states mandate small reading groups as part of the reading instructional block, with many districts mandating the use of Fountas and Pinnell's guided reading framework to direct this small group instruction. A guided reading lesson consists of five structured elements including strategic text selection based on the needs of a group of students, a meaningful text introduction, individual student reading of the text, group discussion of the text, and targeted teaching points, plus two optional elements—word work and text extension (Fountas & Pinnell, 2012). As students progress through the lesson, the teacher prompts and supports student engagement with the text, then leads the group in analysis, evaluation, and critique of the text through a thoughtful discussion and predetermined teaching points (Fountas & Pinnell, 2012).

Online research and comprehension skills make use of traditional literacy skills, such as word decoding strategies and purpose setting, yet also require additional strategic actions and reading processes for full comprehension (Coiro, 2011a). Fountas and Pinnell (2012) have

included a network of strategic actions in their framework to prompt thinking within, beyond, and about texts. More traditional reading processes like word solving, fluency, and self-monitoring strategies are addressed when thinking within the text, while thinking beyond the text and thinking about the text address critical thinking skills, such as making predictions, making connections, synthesizing information across texts, inferring, analyzing, and critiquing the text (Fountas & Pinnell, 2012). Considering that these strategic actions apply to reading comprehension of both traditional and digital literacies, the guided reading framework provides a supportive environment in which to teach online research and comprehension skills through explicit modeling and strategic prompting.

Few studies have been conducted to investigate the use of digital devices within guided reading instruction. One researcher investigated the use of Nearpod, an app for the iPad that allows users to create interactive presentations with videos, polls, slides, and quizzes, in a fourth-grade guided reading group lesson (Delacruz, 2014). The students in the study connected to the teacher-designed presentation of a text that utilized the device's drawing tool to engage the students in interactive vocabulary word work and appealing comprehension quiz questions and polls (Delacruz, 2014). Results of the study showed that Nearpod was a valuable tool because students found the interactivity engaging and the teacher found it easy to monitor student comprehension throughout the lesson.

Instructional Approaches

Although many practical strategies have been proposed to guide students in applying strategies when engaging in online research and comprehension, two instructional approaches have been studied and found to be successful: (a) a think aloud process (Coiro, 2011b) and (b)

Internet Reciprocal Teaching (IRT) (Castek, 2008; Castek, 2013; Leu et al., 2008). Both of these instructional approaches complement each other and were used within the base curriculum design.

Think Alouds

Coiro (2011b) recommended a think-aloud process consisting of modeling, guided practice, and reflection. To effectively design a think aloud lesson, the teacher should “anticipate what students will struggle with most as they approach, navigate, monitor, and respond to the online text; and offer think-aloud models of the thinking and (viewing) strategies one would use to scaffold their understanding in these areas” (Coiro, 2011b, p. 111). Teachers begin the lesson by sharing the online text with students, modeling their thinking of a skill or strategy at key points in the text. Next, they prompt and guide students in guided and collaborative practice of the same skill or strategy, encouraging them to share their thinking. Finally, the teacher engages students in reflection of the process, specifically related to the targeted skill or strategy. Minimal research has been conducted on the effectiveness of think alouds in online research and comprehension instruction. Ebner and Ehri (2013), in their study, examine how the use of a structured think aloud procedure supported students’ learning of new vocabulary on the Internet. Through think alouds, the students explained their word learning goal and the online actions they were engaging in to achieve that goal. The authors found that students were more likely to stay on task and engaged in metacognitive thinking about their Internet usage and vocabulary learning goals with the think aloud procedures (Ebner & Ehri, 2013). Overall, these authors concluded that the structured think-aloud procedure resulted in greater vocabulary learning on the Internet. Coiro (2011b) reported that frequent and repeated

use of the think aloud process helped students develop discourse specific language related to online research and comprehension, which allowed them to recognize, label, and discuss the particular thinking strategies they used for specific online reading purposes

Internet Reciprocal Teaching (IRT). Reciprocal Teaching (see Palincsar & Brown, 1984) has been proven as an effective instructional strategy that improves students' reading comprehension (Rosenshine & Meister, 1994). Reciprocal teaching employs gradual release of responsibility to engage students in collaborative discussions about predicting, questioning, clarifying, and summarizing, while cultivating metacognitive reading strategies (Palinscar & Brown, 1984). Building off of the reciprocal teaching approach, IRT emphasizes the online reading strategies of questioning, locating, critically evaluating, synthesizing, and communicating to develop students' online research and comprehension skills (Leu et al., 2008). Table 4 summarizes the similarities and differences between IRT and reciprocal teaching.

Table 4

Differences Between Reciprocal Teaching and Internet Reciprocal Teaching

Reciprocal Teaching (Palinscar & Brown, 1984)	Internet Reciprocal Teaching (Leu et al., 2008)
Text selection includes traditional, printed texts, usually narrative	Text selection includes online resources, typically information
Teaching instruction using one common text	Teaching instruction focusing on the processes that online readers use to navigate through multiple forms of text
Greater teacher modeling of strategies	Greater student modeling
Focus on comprehension strategies predicting, questioning, clarifying, and summarizing	Focus on online reading strategies of questioning, locating, critically evaluating, synthesizing, and communicating

Researchers have validated the use of IRT in elementary classrooms. One study incorporated the use of IRT in a second-grade guided reading group, termed Internet guided reading, to locate and evaluate information on the Internet (Salyer, 2015). These results indicated that students became more skilled, strategic online readers who were better able to ask questions, use search engines, read and evaluate search results, preview texts in different modes, predict information in websites, and synthesize information across sources (Salyer, 2015). However, in another study conducted by Colwell, Hunt-Barron, and Reinking (2013) with middle school students, it was found that IRT resulted in immediate use of strategies to locate and evaluate online information, yet these strategies failed to transfer to subsequent academic or personal Internet search tasks. One obstacle to the transfer of these strategies noted by the researchers was the students' prior experiences and self-created search and evaluation strategies, typically developed in personal searches outside of school (Colwell et al., 2013). This obstacle

may be overcome by beginning instruction in online research and comprehension in the elementary years before habits are developed, as students are just beginning to use the Internet to find information.

The Proposed Plan for Creating and Evaluating the Curriculum

As noted by Davis & Krajcik (2005), designers must ensure that the “base” curriculum materials are accurate, complete, and coherent in terms of content and effective in terms of pedagogy-with good representations of the content, a clear purpose for learning it, and multiple opportunities for students to explain their ideas. (p. 3).

The base curriculum was designed using the principles and practices set forth in *Understanding by Design* (UbD) to ensure the curriculum, assessment, and instruction was coherent and complete and was “focused on developing and deepening understanding of important ideas” (Wiggins & McTighe, 2005, p. 3). UbD uses a backward design approach. The curriculum designer starts with the desired results, such as standards and objectives, then determines acceptable student evidence or assessments that show students have achieved the learning outcomes, and finally plans the learning experiences and instruction informed by the previous steps. Research literature was consulted often to ensure that the content and pedagogy was accurate and comprehensive.

Case Study Analysis

Currently, there is little research on effective practices and challenges associated with the use of digital devices during guided reading instruction. Case study inquiries can help to

understand an issue by providing an in-depth understanding and description of an event, program, activity, or individuals (Creswell, 2013). Therefore, in order to further support the design of this educative curriculum, a case study analysis of a teacher's attempt to incorporate online research and comprehension skill instruction within the guided reading block was conducted, focusing on the successes and challenges the teacher experienced (see Appendix A for study blueprint). Since the case study was conducted prior to developing the educative features of the curriculum, the purpose of the case study was to examine and explore the challenges and successes experienced by students within the guided reading lessons as perceived by the teacher, as well as understand how the teacher perceived his/her role in the lessons.

Research Questions

The main research question this study addressed was: How does a teacher integrate digital tools during guided reading lessons to support upper elementary students' development of online research and comprehension skills? In addition, the following sub-questions were addressed:

- How does the role of the teacher and students change with the introduction of online texts during a guided reading lesson in a fourth-grade classroom?
- What components of guided reading best support students' online research and comprehension skills?
- What challenges do the teacher and the students face with the integration of online research and comprehension within the guided reading framework?

Methodology

Initially, a purposive, convenience sampling (Creswell, 2013) of two intermediate grade teachers who taught reading at CES were to be recruited for the study because the educational curriculum was being designed for CES teachers to address the complex problem of nonexistent scaffolded teaching attempts of online research and comprehension skills. I recruited five fourth- and fifth-grade ELA teachers at CES to participate in this study with the intent to select two teachers who met specific criteria. As proposed, one of the teachers to be selected from this population was to be more adept with technology use, termed technologically proficient, and the other teacher to be selected was to be less proficient with technology, termed technologically non-proficient, in order to provide a variety of perspectives when designing the educational features for teachers. In this study, technologically proficient was defined as being able to navigate through multiple and varied computer applications, using a variety of technology tools in instruction (such as SMART notebook lessons, Powerpoints, and/or inclusion of videos or other multimedia), having knowledge of multiple Internet search engines and advanced search techniques (such as using quotations or Boolean terms), and having knowledge of different web sources (such as blogs, wikis, advertising sites, etc.). However, only one teacher, a technologically proficient teacher, agreed to participate in the study.

Upon study approval from the school principal, University of Central Florida Internal Review Board and PCPS Internal Review Board, the teacher participated in a brief PD session to define online research and comprehension skills and guide the teacher's baseline understanding of the skills and strategies needed by students to engage in online research and comprehension. This PD session began by explaining what constitutes online research and comprehension skills

and provided a rationale for teaching these skills. Next, the teacher engaged in an activity in which she was tasked with finding an answer to a question that led her to a hoax website. The facilitator recorded the actions and steps she took to find the answer. Once the participant discovered that the question led her to a hoax website, the facilitator led a discussion about validating the reliability and accuracy of websites. After the activity, the participant learned more about the five processing practices necessary for online research and comprehension and the dispositions of online readers through a presentation format and compared these processes to the actions she took to answer the question. Finally, the facilitator provided the teacher with information and protocols for two instructional approaches, IRT and Think Alouds. At the conclusion of the presentation, the facilitator provided the teacher with links to the TICA checklist for ideas for learning goals, links to Common Sense Media (<https://www.common sense media.org/educators>) and links to GoogleSearch Education (<https://www.google.com/intl/en-us/insidesearch/searcheducation/index.html>) for lesson ideas. The facilitator also provided additional time to discuss questions, concerns, and ideas for implementation.

Following the PD session, the teacher was provided with six Lenovo ThinkPad laptops running Windows 8 for two weeks. These laptops came from the computer on wheels cart that was shared among teachers at CES. During the course of two weeks, the teacher used the laptops during guided reading with one of her existing groups to facilitate learning of online research and comprehension skills. The teacher individually self-selected a group of students to target for this instruction based on her knowledge of the students' needs and comfort using technology. Nonnegotiable expectations were reviewed with the participant. The expectations

were that the teacher use the laptops with the same, chosen group for a total of two weeks, complete the reflection log daily, participate in two additional interviews, and bring any concerns to the researcher promptly.

Data Sources

Given that the emphasis of the case study was on understanding the teacher's perspectives of teaching online research and comprehension skills and her perspectives on learning challenges faced by students, observations were not conducted. Therefore, interviews with the teacher and daily reflection logs provided by the teacher were the main sources of data collected in this case study.

Researcher created daily reflection logs with open-response questions were utilized to understand what skills the teacher chose to teach, why she chose those skills, the approach used, and daily challenges and successes (further discussed in Chapter 2). The reflection logs were intended to provide insight into the choices the teacher made as she taught these lessons. In addition, the reflection log provided daily, initial reactions to the lessons with an emphasis on specific challenges the teacher faced in instruction and specific challenges the students faced in learning online research and comprehension skills within a guided reading context.

A total of three interviews were conducted with the participant to gather demographic information about her and to examine (a) the guided reading components that were useful in teaching online research and comprehension; (b) the shifting roles of the students and teacher; and (c) the overall challenges and successes for both the student and teacher as perceived by the teacher (see Appendix B for interview protocols). The purpose of the initial interview was to gather information about the participant's experiences with technology use both in and out of the

classroom, level of comfort with technology both in and out of the classroom, and perspectives on the role of technology in teaching and learning. Prior to each follow-up interview, the daily reflection logs were reviewed. The follow-up interviews were conducted to elicit more detail about the reflection log responses, particularly in identifying the challenges of teaching and learning online research and comprehension skills within a guided reading context and if or how each of the challenges were overcome. Each of the interviews was fully transcribed for analysis and interpretation.

Data Analysis

Thematic analysis methods were used to analyze the interview transcriptions and reflection logs (Cresswell, 2013). An initial read through of the interview transcriptions and daily reflection logs with brief note-taking of key ideas was completed to get an overall sense of the data set. Then, initial categories of major ideas were generated with a search for multiple forms of evidence across the data to support these categories. Next, subsequent readings of the data set occurred to examine the data in relation to the research questions. The data were coded for themes that represented the key ideas and provided insight to the questions under investigation. These themes were described and interpreted, along with previous research findings to guide the development of the educative curriculum with a specific focus on developing the educative features for teachers (Creswell, 2013). As a result, the case study informed the types of supports that teachers need to be successful when using the curriculum to guide their instruction.

Educative Curriculum Expert Panel Review and Pilot Study

After a sample of lessons from the education curriculum was completed, a panel of experts were invited to review the curriculum materials and provide feedback. Following the review, the curriculum will be completed post dissertation. Next, I will conduct a short pilot study to determine the effectiveness of the curriculum and obtain feedback from a teacher who used the curriculum and student data from included assessments. Following the pilot study, the curriculum will again be revised for clarity and content.

Key Milestones

An overview of the key milestones and timeline in the development of this design project is provided here. A more detailed timeline is provided in the GANTT chart presented as Figure 2. The timeline included in the GANTT chart helped to facilitate planning and implementation of the pilot study, curriculum development, and expert panel review included within this DiP. The case study research was completed by the end of November 2015. The base curriculum sample of lessons were completed in January 2016, with the educative curriculum components being added to the lessons in March 2016. An expert panel review of the curriculum was completed during April 2016. A short pilot of the curriculum will occur post dissertation. The final deliverable was vetted sample lessons of an educative curriculum unit for intermediate teachers introducing online research and comprehension skills to students.

[illegible]

Figure 2. GANTT Chart With Deliverables

CHAPTER 2 PILOT STUDY

Introduction

During the course of this DiP, I collected data through a qualitative case study analysis to further examine and explore the challenges, successes, and role changes a teacher and her students experienced when online research and comprehension skills were taught within the context of the guided reading framework as established by Fountas and Pinnell (2001, 2012). Case study inquiries can help to understand an issue by providing an in-depth understanding and description of an event, program, activity, or individuals (Creswell, 2013). The purpose of this study was to examine and explore the challenges and successes experienced by students in the guided reading lessons as perceived by the teacher as well as to understand how the teacher perceived her role in the lessons. The teacher's perspective was important to this study because both digital literacies and guided reading development require the teacher to play a facilitative role during the learning process.

This study was conducted with a technologically proficient fourth-grade reading teacher at CES. During the course of this two-week study, the teacher taught one small guided reading group online research and comprehension skills within the context of the guided reading framework. Her perspectives on the experience, including role changes, challenges, and successes associated with the tasks at hand, were the focus of data collection. Data collected were meant to inform the design of the framework used in the base curriculum of the educative curriculum. The data collected also informed the design of specific features needed to develop teacher knowledge of online research and comprehension skills and guide their instructional practices. The central question addressed by this pilot study was:

- How does a teacher integrate digital tools during guided reading lessons to support upper elementary students' development of online research and comprehension skills?

Additionally, several subquestions of the pilot study focused on specific aspects of guided reading instruction. These subquestions were:

- How does the role of the teacher and students change with the introduction of online texts during a guided reading lesson in a fourth-grade classroom?
- What components of guided reading best support fourth-grade students' online research and comprehension skills?
- What challenges do the teacher and the students face with the integration of online research and comprehension within the guided reading framework?

This chapter describes the context of the study, methods used in data collection and analysis, results of the study, and provides evidence about how the data collected from this study guided the development of the framework for guided online reading used in the base curriculum materials.

Methodology

A qualitative case study design was used in this pilot study (Creswell, 2013). This section describes the study context, provides an in-depth description of the participant, and explains the procedures used to carry out the study and analyze the data.

Current Guided Reading Instructional Practices at CES

Anyone visiting any fourth- or fifth-grade classroom at CES during the literacy block would see students busily engaged in reading center activities while the teacher conducted lessons with small groups of students at a side table. Of the state and district required 120-minute daily literacy block, teachers at CES were required to use at least 60 minutes to target specific student literacy needs through guided, small group instruction (PCPS, 2015-2016). As required by the district, teachers utilized Fountas and Pinnell's (2001, 2012) guided reading framework to form groups and guide their instructional routines with these small groups (PCPS, 2015-2016).

I first began working with the literacy coach and teachers at CES when I was a district-based literacy coach three years ago. CES was one of the main schools I supported, so I was assigned to visit the school every Monday morning for the 2013-2014 school year. During this time, I was uniquely positioned to mold the type of instruction students received in guided reading groups. I worked with the literacy coach to help clarify the three portions of the guided reading framework for teachers, model guided reading lessons, observe teachers, and provide feedback on lesson implementation. During the 2014-2015 year, I transferred to CES as the school-based literacy coach and continued to support instructional delivery of guided reading lessons. Therefore, the instructional routines outlined in the following paragraph detail the guided reading framework that was used by teachers at CES during this DiP.

Each lesson consisted of three distinct portions: before reading, during reading, and after reading activities (PCPS, 2015-2016). In the before reading portion, teachers stated and modeled the skill or strategy focus, introduced new vocabulary and unfamiliar language structures, and

guided students to set a purpose for reading. This portion was meant to be brief, but supportive, allowing all students access to instructional level text. Next, each student read the text individually and, in most cases, silently in the intermediate grades. As students were reading, the teacher prompted individual readers to read out loud, listened to their reading fluency, and prompted them to engage in strategic reading actions. Once all students finished reading the text or selected portion of the text, the teacher led students in a discussion of the text and extended students' thinking about it, requiring students to use text-evidence to support their responses and ideas. When needed, teachers extended the after reading portion with explicit word study instruction (PCPS 2015-2016).

During these guided readings lessons, teachers chose leveled texts for instruction that were based on the group of students' strengths and needs. Sources for these texts included resources provided in the core reading curriculum, such as leveled readers, supplemental instructional programs, such as printed passages, leveled book sets shared among teachers within a grade level, and chapter book sets checked out from the literacy coach or media center. On rare occasions, teachers may have printed passages from Internet sources such as <http://readworks.org> or <https://newsela.com> for use in guided reading lessons. Portable technology devices, such as laptops and iPads, were not used during guided reading instruction at CES. This was due to many factors corroborated in the research, including lack of access to multiple devices (Hew & Brush, 2007; Hutchison & Reinking, 2011), limited teacher knowledge of instructional practices with devices (Hutchison, 2012) and limited teacher knowledge and self-efficacy with how to operate the devices and/or applications (Pan & Franklin, 2011).

Participant

A purposive, convenience sampling method was used to recruit the participant in this case study (Creswell, 2013). Intermediate grade teachers (4th and 5th grade) whose primary responsibility was to provide instruction in reading were recruited for participation. The original intention of the study was to select two teachers from those recruited, one technologically proficient teacher and one technologically nonproficient teacher. Technologically proficient was defined as being able to navigate through multiple and varied computer applications, using a variety of technology tools in instruction (such as SMART notebook lessons, Powerpoints, and/or inclusion of videos or other multimedia), having knowledge of multiple Internet search engines and advanced search techniques (such as using quotations or Boolean terms), and having knowledge of different web sources (such as blogs, wikis, advertising sites, etc.). This definition was influenced by Koehler's and Mishra's (2009) TPACK model which states:

Persons understand information technology broadly enough to apply it productively at work and in their everyday lives, to recognize when information technology can assist or impede the achievement of a goal, and to continually adapt to changes in information technology. (p. 64).

However, of a total population size of five teachers, only one agreed to participate in the study. Other potential participants chose not to participate due to medical reasons and lack of time to fully participate because of other responsibilities.

One fourth-grade reading teacher, Ella (pseudonym), responsible for teaching two sections of English/Language Arts classes, consisting of 90 minutes of reading instruction and 30 minutes of language arts instruction daily, consented to participate in this case study. Ella was a

white, middle-aged female who received a bachelor's degree in child development and went on to procure her professional teaching certificate through alternative certification courses and examinations taken after she received her degree. Ella was an experienced teacher with seven years of classroom teaching experience and two years of substitute teaching experience. She considered herself technologically proficient and very comfortable using a variety of devices, stating that as a child her family always had the newest technology. She considered technology to be a central aspect of her current personal and professional life, and believed that she was a quick learner with new technologies and applications. Ella believed that "everything is technology bound" these days and students must have basic skills with technology.

Ella described technology usage to be integral to her classroom instruction. During her years as a substitute teacher, she first experienced and used interactive white boards to deliver the lessons left by teachers. Her classroom at CES had a SMART board that she indicated was central to her teaching practices, claiming, "the SMART board is definitely something I use all of the time . . . they (the students) get up and use it for writing to show their work . . . that allows me to see what they know." During previous school years, Ella engaged her students in small group and individual projects in which they used technology to research topics and create final products, including typed essays and PowerPoint presentations. Furthermore, Ella used her iPad to engage students in quick practice activities, such as practicing math facts with game-based applications. She indicated that during the 2015-2016 school year her students had limited opportunities to use school computers for Internet research and projects or her iPad for practice activities. "When they are on the computers, they are on the (reading) programs. They haven't really had access to . . . use the web browsers." At CES, students mainly used the computers to

get on the iReady computer-based instructional program, take Accelerated Reading tests, and take other computer-based reading assessments mandated by the school. Ella shared that she was sometimes a bit wary of allowing students to conduct Internet research without close supervision “because of the access that they could potentially have to certain sites . . . even though I know that PCPS has the filters, they always find ways around them.” However, she believed that teaching students how to use technology properly was an important skill in the 21st century and that students were more engaged and motivated learners when they were able to use those tools.

In addition to seeing technology usage as integral to reading instruction in the classroom, Ella also saw technology as essential to supporting her work as a professional. She often flexibly used different applications and devices to: grade student work, create data templates to analyze and compare student data, track student progress, communicate with parents, search for engaging lessons to teach a concept, create SMART notebook lessons, find resources for lessons, and much more. Due to the fact that all teachers at PCPS had access to Google Drive, Ella and her team created a shared folder, making it easier to share lesson resources and collaborate on lesson plans and other grade level projects.

Data Sources

Given that the emphasis of the case study was on understanding the teachers’ perspectives of teaching online research and comprehension skills during guided reading, and their perspectives on learning challenges faced by students, I did not conduct any observations. Instead, I collected two other types of data to describe Ella’s perspectives: (a) interviews and (b) daily reflection logs.

Interviews

During the course of the study, I conducted three interviews with Ella. Interview protocols are contained in Appendix B. I conducted the first interview at the start of the study in order to gather relevant background information about the teacher's prior experiences, perspectives of technology integration, level of proficiency and comfort with technology, and knowledge of online research and comprehension skills. This first interview, which lasted approximately 20 minutes, took place in the teacher's classroom during her planning period while her students were at special area classes. I conducted the second and third interviews at the end of the first week and second week of the study, after the teacher was engaged in the guided reading lessons which focused on online research and comprehension skills. These semi-structured interviews were meant to examine the teacher's perspectives on the implementation of the lessons in further detail and clarify or probe further into the teacher's responses on the daily reflection log. Each of these interviews lasted approximately 15 minutes, and they both occurred in the teacher's classroom during her planning period when her students were at special area classes. Prior to the interviews, I examined the teacher's daily reflection logs to determine which aspect(s) of instruction to probe further into from that week.

Daily Reflection Log

Once Ella began the instruction under investigation, I asked her to complete a daily reflection log each day (see Figure 3). The data provided by the logs helped me understand what skills Ella chose to teach, why she chose those skills, the approach she used, and daily challenges and successes for both her and her students. This log was intended to provide insight into the choices Ella made as she taught the lessons and (b) the daily and initial reactions to the lessons

with an emphasis on specific challenges faced within a guided reading context. Ella was given the option of completing the daily logs through a written form or electronically through Google Spreadsheets. She chose to complete the logs through Google Spreadsheets, set up by me using a shared folder with Ella.

Daily Reflection Log	
Date:	
<u>Daily Learning Target</u> (What is your student objective for the day?)	
<u>Rationale for Target</u> (Why did you choose to teach this today?)	
<u>Approach</u> (Briefly describe how you taught it to the group or copy your lesson sequence here. Identify what aspect of guided reading you used most often today.)	
<u>Successes</u> (What went well during the lesson? What did students catch onto quickly? Describe any AHA moments? To what do you attribute the successes?)	
<u>Challenges</u> (What challenges did you face? Technical difficulties? Student misconceptions or misunderstandings? To what do you attribute the challenges?)	

Figure 3. Daily Reflection Log

Implementation Plan

Professional Development (PD) Session

After the initial interview, Ella participated in a one-hour PD session, facilitated by me, to further expand her understanding of the online research and comprehension skills that students need to be successful, help initiate instructional ideas for lesson development, equip her with

resources, and provide clear guidelines and expectations for the study. The initial interview suggested that Ella had a good working knowledge of Internet and search strategies, based on strategies she used in her own inquiries. For example, when asked to explain the skills that she believed were important to online research, Ella stated the importance of:

knowing how to search and then being able to type, knowing what kinds of questions to ask to find your answers, . . . knowing how to search something specific, using specific words, putting them in quotes so they look for those specific words, knowing what sites to use that will give you the correct answer and not just those random sites that pop up and have nothing to do with what you are actually looking for, and then, when you get to a site, understanding how to use it.

Knowing that Ella had a strong base of knowledge, I modified the PD from its original plan to better support Ella's needs.

I began the PD by briefly defining and providing a rationale for instruction in online research and comprehension. Next, I prompted Ella to search for information on the Pacific Northwest Tree Octopus, a hoax creature that leads many web users to the website <http://zapatopi.net/treeoctopus/> when using major search engines. As she engaged in this search, I recorded a list of her actions. As an expert Internet searcher, it did not take long for Ella to determine that the Pacific Northwest Octopus was a hoax. Once she discovered this, we discussed the actions and types of thinking she engaged in to make this determination and further discussed how students may process this same information. I then introduced her to the five strategies of online reading and comprehension identified in the research by Leu et al. (2008): identify a question/problem, locate information, evaluate information critically, synthesize

information, and communicate information. Considering that Ella had innately discovered the strategies of identifying a question and locating information, I briefly discussed these strategies and then spent more time focusing on evaluating and synthesizing information. We then discussed the three dispositions (persistence, reflection, and collaboration) that enable students to effectively use these five strategies (O'Byrne & McVerry, 2009).

After ensuring that Ella clearly understood the strategies and dispositions, I continued the PD with instructional methods for online research and comprehension skills. As Ella was already quite familiar with the guided reading framework, I provided her with an article to review the framework as needed and an offer for further guidance at her request. The focus of this part of the PD was on IRT (Castek, 2008) and Think Alouds (Coiro, 2011b). I suggested that Ella consider routines for incorporating think alouds aligned with those recommended by Coiro (2011b). First, the teacher anticipates students' misconceptions or potential areas of difficulty in online research and models her thinking of these areas through targeted think alouds (Coiro, 2011b). Next, the teacher leads students in guided and collaborative practice, encouraging students to think aloud to the group as well (Coiro, 2011b). Finally, the group and individual students reflect on how they used the skill or strategy modeled by the teacher (Coiro, 2011b).

To conclude the PD, Ella and I explored resources for teaching online research and comprehension skills, the devices, and expectations for the study. I recommended that she use the TICA checklist (Leu et al., 2008) to guide her lesson objectives and daily learning targets. In addition, we visited Common Sense Media (<https://www.common sense media.org/educators>) and GoogleSearch Education

(<https://www.google.com/intl/enus/insidesearch/searcheducation/index.html>) to discuss resources for lesson ideas. Next, I provided Ella with the device students were to use during these lessons to familiarize herself with the basic features of the Lenovo ThinkPad. Finally, I discussed expectations for the lesson implementation. Expectations were that Ella was to choose one small group to work with online research and comprehension skills consistently each day for at least 15 minutes over a two-week period, commit to completing the daily reflection logs, and participate in two follow-up interviews. I also strongly encouraged Ella to bring any questions or concerns to my attention as soon as possible, so that I could support her throughout the study.

Lesson Implementation

After the PD session, I provided Ella with six Lenovo ThinkPad laptops running Windows 8 to begin the guided reading lesson implementation. Ella chose to work with one of her higher reading groups, because she stated that she would not be concerned that their reading level would inhibit their ability to focus on the skills being introduced. She was able to implement the lessons for 10 days over a three-week period. Due to absences, technical challenges, school events, and schedule changes, Ella was unable to meet with this group of students each day during the second week, so she continued instruction into a third week. At the conclusion of the first week in which the lessons were implemented consecutively each day, I conducted the second interview with Ella. After the conclusion of the third week, I conducted the third interview with her. While she was not able to consistently enter information into the reflection logs daily, she kept written notes daily and transferred those notes into the reflection log the day before each of our interviews.

Data Analysis Methods

I transcribed all interview data collected verbatim for in-depth analysis. In addition, I reviewed the reflection log prior to the conclusion of the study and clarified parts that were unclear with the participant.

I used thematic analysis methods to analyze the interview transcriptions and reflection logs moving through these stages: reading and memoing, describing and classifying, interpreting the data, and representing the data (Creswell, 2013). First, to get an overall sense of the data, I read through all of the interviews and reflection logs carefully making margin notes of key ideas. Next, I used categorical aggregation methods to form codes of instances that repeated themselves within the data (Creswell, 2013). Each code was assigned a specific color. I then reread the data and underlined specific forms of evidence for each code. I then grouped these codes into like categories based upon patterns observed in the data. After this category formation, I reread the data set considering the categories and their relationship to the research questions to form final themes for describing and interpreting the case.

Results

Examining the implementation of lessons teaching online research and comprehension skills within the guided reading framework shows that the implementation was challenging and resulted in role changes which were met with enthusiasm by both Ella and her students. According to Ella, “they (the lessons) went really well. The kids were really excited. They loved using the touchscreen computers, the laptops, and they were really into it . . . they are literally my first students to be at that back table.” The purpose of this study was to examine and explore the challenges experienced by students within in the guided reading lessons as perceived

by the teacher, as well as understand how the teacher perceived his/her role in the lessons. This section will describe Ella's implementation of these lessons and examine the recurring themes regarding the challenges and role changes perceived by the teacher, which are summarized in Table 5.

Table 5

Themes Identified in Data Sources

Themes	Examples in the Data Sources
Challenge-Technology Issues	<ul style="list-style-type: none"> • The struggle to keep them (the computers) working (Interview) • Two of the computers would not turn on (Interview) • Computer died on us during the lesson (Reflection Log)
Challenge-Students' Lack of Knowledge	<ul style="list-style-type: none"> • I don't think they have a lot of background knowledge with the keyboard (Interview) • The students struggled with the difference between a search bar and the address bar (Reflection Log)
Instructional Challenge-Distractions on the Devices	<ul style="list-style-type: none"> • Sometimes they would get off task with all of the new features (Interview) • Getting students to stay on task and not just click on the hyperlinks to go exploring (Reflection Log)
Instructional Challenge-Student Engagement	<ul style="list-style-type: none"> • They . . . don't necessarily engage in the group discussion (Interview) • The other two were just kind of very quietly taking notes (Interview)
Instructional Challenge-Time-Consuming Lessons	<ul style="list-style-type: none"> • I plan for a lot and get through only a bit of it (Interview) • It would take that extra couple of minute for them to log in and get onto the Internet (Interview) • It takes the students a long time to read and take notes and then search for what they didn't understand (Reflection Log)
Role Changes-Teacher	<ul style="list-style-type: none"> • I sat back and let them tell me where they were going (Interview) • I would ask some probing questions and they just kind of took over (Interview) • I am allowing students to do the majority of the talking within the group (Reflection Log)
Role Changes-Students	<ul style="list-style-type: none"> • They (the students) led the conversations (Interview) • Even if they weren't sitting next to each other, they would be talking across the table (Interview)

Description of the Lessons

Ella decided to begin her implementation of these lessons by first introducing students to the computers they would be using and ensuring they had basic web searching skills. Her first and second lesson ensured the students were able to power on the devices, log in successfully, and assessed student knowledge of the skills in Phase 1 of the TICA checklist, such as powering the computer on/off, opening programs and applications, navigating to search engines, toggling between windows and applications, and using the navigation buttons on web browsers (Leu et al., 2008). During these lessons, Ella stated that, “The students were able to do much more than expected. They just learned as they played.” However, she also noted students’ unfamiliarity with web browsers as students struggled to identify a difference between the search bar and address bar when visiting a search engine.

After Ella was sure that students had ample skills to navigate their devices and basic navigation skills within a web browser, she introduced students to a teacher generated question, “Who has controlled Florida and how has their control or action affected others?” Ella chose this question as a topic to study because it was directly related to an upcoming social studies unit and she thought the first part of the question would lead to skill instruction that would support students in answering the more complex second part of the question. Her next two lessons centered on using strategies to understand the question by setting up notes, breaking the question into its two parts, and creating key words or phrases for their search. During the lesson in which students set up their notes in a Word document, Ella noted that “the students struggle with typing, they hunt and peck,” making the lesson take longer than initially expected. To ensure that students understood the question, she started the next lesson by asking students “What

should they search for? What things would they type into the search box in order to get an answer to their questions?” This check for understanding at the beginning of the lesson was imperative for ensuring students understood the question and guided the types of supports she provided as students generated key words (who, controlled, and Florida) to answer the first part of their question “Who has controlled Florida?”.

Next, Ella guided students to read through and examine the structure of a search engine results page. She began the lesson by reviewing the question and key words with students, then had students search the key words on their own computers, using the search engine of their choice which was Google in all cases. Once students had pulled up the results list, she asked them to discuss which link was the best one to visit first. As students began to debate their choices, she led them in a discussion of knowing more about the website by looking the URLs to determine the author or supporting organization and domain extensions (.com, .org., .edu). Ella observed students begin using the URL in their discussions, such as, “So this is a good site because it has an organization. This is a National Geographic site or a Wikipedia.”

Ella quickly moved on to guiding students in locating information on websites for the next three lessons while reinforcing key word generation and examining the search results page. During these lessons, Ella helped students examine the difference between reading on a webpage versus a book or article and use the text features to locate relevant information. She reflected on a misunderstanding one student had during these lessons and how her prompting helped him gain a new understanding about search results.

One of them went to a site . . . and he was like what is this? I was like, well, let’s go back. This is the one you clicked on from the search results. Read this snippet. Does

this give you any sort of, you know, tell you anything about what you were looking for?

He said, “no.” And I asked why he clicked on it? He said he didn’t know. He was just clicking to click. That’s when he discovered that noticing the little brief description, snippet, of what the sites going to give you can help.

Ella noticed that these lesson prompted students to collaborate with each other in their search for relevant information. “There’s a lot more conversation . . . they are talking a lot more about what they’ve learned and . . . talking about what they are finding.”

To conclude the study, Ella spent the last three lessons guiding students as they read information across multiple pages in one website, with the main focus of these lessons on how to identify and use hyperlinks appropriately. Throughout these lessons, Ella noticed that, “Students got confused and sidetracked with what they were actually looking for,” as they navigated through hyperlinks to go to multiple webpages. Her guidance and prompting with questions such as, “What’s your question? What are you looking for? Does this site give you any information? . . . Where do we need to go next?” were necessary to help students stay focused on their purpose, use the web browser features effectively (back and forward icons), and manage the multiple layers of a website successfully. During these lessons, students were constantly using the skills they learned in previous lessons to make sense of the information. Ella described another instance in which a student used the timeline on the webpage to identify an incorrect assumption and then conducted another search to clarify.

One of them read something about Cuba and took it as Cuba controlling Florida. I said, Ok, wait, but you’ve read and you’ve seen the timeline. Is Cuba on there, on the timeline and on the site? She said no, it wasn’t. I then asked her how she felt about Cuba

controlling Florida. She's like, I don't know, it doesn't make sense. So I said, ok, well how would we find out if Cuba controlled Florida? She said, Well, I'd just do another search . . . So she opened up another window and searched. She found that that's one of the reasons why Spain traded with Great Britain, for Cuba. So, she made that connection.

Challenges

Several categories of different challenges arose during the course of the study. These challenges centered around technology issues, students' lack of computer knowledge, and instructional challenges for the teacher. Each of these challenges are explored in this section.

Technology Issues

One of the biggest challenges that occurred was “the computers themselves and the struggle to keep them working.” Of 10 total days of lessons, Ella listed technology issues as a challenge a total of four days on the reflection log. During the first day alone, “two of the computers would not turn on,” and another day further into the lessons when the “computer died on us during the lesson.” Ertmer et al. (2012) have identified two types of barriers that affect technology integration in the classroom. First-order barriers, those referring to external barriers outside of the teacher's control such as lack of resources, have consistently been found to be the most common barriers (Ertmer et al., 2012; Hew & Brush, 2007; Hutchison & Reinking, 2011). This includes access to and responsiveness of technology support personnel which are directly related to the number of technical support personnel provided to a school and the number of teacher requests received by these personnel (Carver, 2016; Hew & Brush, 2007). CES teachers had access to one technology support representative who was on-campus a mere two days a

week. Although Ella was fairly proficient in troubleshooting technology issues, she had to work within the computer rights she was provided by PCPS. Therefore, Ella was unable to resolve many of the technology issues she encountered such as dead computers and issues connecting to the network when logging in. Although Ella promptly submitted tech support tickets, many of these computer issues were not resolved during the course of the study, resulting in constant borrowing of other laptops from the COW and passing the working computers back and forth between teachers. Ella responded to technology challenges during lessons by first trying to troubleshoot issues herself and then pairing students up to share the laptops. However, Ella noted that, in some ways, the computer sharing provided students with more opportunities to collaborate. “The students that were sharing were like, go look at this site, this is a good site. Or sometimes they said let me type this because I can type faster than you. So they helped each other out.” Although teachers may not have complete control when solving technological challenges, the design specifications for the educative curriculum included educating teachers with technological knowledge to prepare them with basic trouble-shooting skills in order to address this challenge as presented in Table 3.

Students’ Lack of Computer Knowledge

Students’ lack of computer knowledge and proficiency with the devices was another theme that Ella perceived as a challenge. She remarked on students’ lack of sufficient typing skills and knowledge of the keyboard.

I don’t think they have a lot of background knowledge with the keyboard. If they haven’t really used it, you can tell by the typing. They hunt and peck or they know just a couple

(of keys) and then they have to ask where the space bar is or how do I get the question mark. So I tell them you have to shift and press that key. Simple little things like that. Another challenge posed by students' lack of knowledge was how to proceed when they came across a computer that was still logged in under another student.

Sometimes we would get the computers that weren't logged out from the previous student that had it . . . Some of them would just shut it down so . . . it would take that extra couple of minute for them to log in and get onto the Internet.

Finally, Ella observed that most of the students faced challenges when attempting to toggle between the web browser and their Word document for note-taking. "They had trouble minimizing things because they weren't using the tracking pad . . . so, instead of pressing minimize, they would press the exit button and then it would shut it out completely." Due to this problem and the students' labored typing speed, halfway through the study Ella decided to have students take notes with paper and pencil to save time. "They just kept a little binder, a little notepad of what they had found." Challenges with student lack of knowledge and proficiency with basic computer skills and lack of time to teach basic computer skills are well-documented barriers to technology integration that must be overcome through creative practice activities and teacher and student persistence (Ertmer et al., 2012; Hew & Brush, 2007; Hutchison & Reinking, 2011; O'Byrne & McVery, 2009). Therefore, the design specifications for the educative curriculum required that the curriculum teach students basic skills and strategies in order to address the challenge of students' lack of knowledge as presented in Table 3.

Instructional Challenges

Finally, one other theme within the challenges that Ella faced during this study was formed around varied instructional challenges. These ranged from classroom management with the devices to reserved students to the amount of time each lesson took.

First of all, Ella discussed that the devices were highly engaging for students, yet also proved to be a distraction at times. “I think they had so much fun with these computers that sometimes they would get off task with all of the new features . . . instead of using the keyboard to type, they would pull the keyboard up on screen.” This resulted in continuous discussions and reminders about when it was more efficient to use the keyboard, such as when typing into the Word document, versus the onscreen keyboard, such as when searching with key words. Other times, students would get easily distracted by hyperlinks and “students got confused and sidetracked with what they were actually looking for,” a problem that is noted extensively in research (Coiro & Dobler, 2007; Fabos, 2008; Hew & Brush, 2007). Ella would often have to redirect and refocus students, “We just keep clicking to learn about things, but it’s not what we need to focus on.”

Another challenge often brought up by Ella was working with her shy and reserved students. “I have two (students) that I’ve had the challenges of getting them to talk. They are doing what they need to be doing but they . . . don’t necessarily engage in the group discussion.” This posed a significant challenge for Ella, one that she never overcame, but she felt those students were missing out on the rich discussion and learning that was happening among the other students. “The other two were just kind of very quietly taking notes.” She also stated that

she frequently had this same problem with these students in other instructional formats, such as whole group discussions as well.

Lastly, Ella explained her frustration with the amount of time these lessons took to implement. “I plan for a lot and get through only a bit of it.” Ideally, Ella planned to address all five online research and comprehension strategies during the study, but was only able to address identifying a problem, locating information, and touched on critically evaluating information. At the conclusion of the study, Ella stated, “It takes the students a long time to read and take notes and then search for what they didn’t understand.” This finding is consistent with previous research findings indicating that planning for and implementing technology-integrated lessons requires more time for teachers (Hutchison & Reinking, 2011; Pittman & Gaines, 2015).

Although these instructional challenges come in many different forms, the design specifications of the educative curriculum addressed in Chapter 1 supported teachers in overcoming these challenges. The design specifications explain that the curriculum was designed to educate teachers with pedagogical and content knowledge needed to facilitate instruction in online research and comprehension skills as well as educating teachers on the strategies and skills and underlying theories surrounding online research and comprehension skills.

Role Changes for the Teacher and Students

To distinguish between the guided reading framework conceptualized by Fountas and Pinnell (2001, 2012) and the modifications the teacher made in this pilot study, the former will be referred to as traditional guided reading, while the latter will be referred to as online guided reading. In this DiP, online guided reading refers to lessons in which the teacher prompts and

supports students in locating Internet information and reading online texts, such as webpages, videos, blogs, etc.

One final theme that was widely present in the data collected was the clear role changes of the teacher and the students within the guided reading framework (see Table 6).

Table 6

Traditional Guided Reading Versus Online Guided Reading Roles and Components

	Traditional Guided Reading	Online Guided Reading
Roles	<ul style="list-style-type: none"> • Teacher selects text • Teacher acts as structured guide • Teacher leads the conversation • Moderate level of student collaboration 	<ul style="list-style-type: none"> • Students select text with teacher guidance • Teacher acts as unstructured facilitator • Students lead the conversation • High level of student collaboration
Components	<ul style="list-style-type: none"> • Follows typical lesson structure (Before, during, and after reading parts) • Introduction supports readers as reading • All students read a common text • Planned teaching points 	<ul style="list-style-type: none"> • Structure is fluid, frequently moving between prompting, discussion, and teaching points • Introduction is used as main teaching point • Students may be reading different, related texts or sections of text • Flexible, impromptu teaching points

In traditional guided reading, the teacher is the key decision-maker in selecting texts for the group to read, planning a book introduction to support students, and prompting the conversation to achieve targeted teaching points (Fountas & Pinnell, 2012). In online guided reading, students are the key decision-makers in text selection and in determining the topics of conversation. Ella found that her role changed from that of a structured guide to more of an unstructured facilitator.

“They (the students) led the conversations . . . I didn’t have to start it with them . . . I would just pop in to get them to give me more and to get them to think in a different way.” Oftentimes she found that students led the lesson, starting the discussions, guiding others navigation, and helping each other develop the strategies they found most useful.

I sat back and let them tell me where they were going and when I felt that they would maybe go off . . . the direction I wanted them to go, I would guide them back . . . I would ask some probing questions and they just kind of took over and went searching and trying to find their answer.

In this way, the roles of the students changed from participants with less control of the choices made, responsible for responding to the teacher prompts in traditional guided reading, to highly active participants, responsible sharing their ideas, results, and strategies with others in the group. According to Ella, “Even if they weren’t sitting next to each other, they would be talking across the table” and were “thoroughly enjoying it.” As noted in the instructional challenges presented in Table 3, the design specifications were designed support teachers as they navigate these role changes by providing them with pedagogical knowledge needed to facilitate instruction in online research and comprehension skills.

Discussion

Even though Ella faced many challenges with the implementation of online research and comprehension skills within her guided reading lessons and had to navigate many role changes throughout the course of the study, the successes were evident. These students developed and practiced valuable online search skills, as they learned more about the history of Florida. In addition, Ella saw evidence of student growth in their discussions and approaches when

searching for information and reading information from a website. Ella's perspectives and experiences help us infer that the guided reading framework may indeed be a viable way to introduce online research and comprehension skills to upper elementary students. However, her experiences also show that Fountas' and Pinnell's (2012) conceptualization of the guided reading framework may need to be reworked to address the role changes that occur for teachers and students during online guided reading.

Comparison of Traditional Guided Reading to Online Guided Reading

According to the guided reading framework generated by Fountas and Pinnell (2012), a structured guided reading lesson consists of the following components: "Selection of a text, introduction to the text, reading the text, discussion of the text, teaching points, word work (optional), extending understanding (optional)" (p. 269). The differences between the role of the teacher in traditional guided reading versus online guided reading have been discussed previously. This section contains a discussion of the differences between the components as identified in the case study data and review of research (see Table 6).

When selecting text for traditional guided reading, the teacher considers a group of students' abilities and reading levels (Fountas & Pinnell, 2012). In online guided reading, the teacher may choose a topic or concept for inquiry; however, students will likely generate a multitude of search results, resulting in students who have chosen different, yet related texts to read during the lesson. Typically, traditional guided reading lessons begin with a text introduction that scaffolds the text to support readers during their reading of the text (Fountas & Pinnell, 2012). Instead of a traditional text introduction, the teacher may introduce the topic under research or review online research strategies that may need to be employed during the

lesson. In addition, the text introduction also adds targeted teaching points that will support online readers in using one of the five strategies for online research and comprehension identified earlier. These components are especially critical for online guided reading because they provide time for the teacher to build shared academic language among the group through think alouds and modeling that will be used later in student discussions (Coiro, 2011b).

In both traditional and online guided reading, the teacher must prompt and support students to employ strategic actions as they are reading the text or engaging in online inquiries (Fountas & Pinnell, 2012; Coiro, 2011b). Yet, online readers must also be prompted and supported in searching for relevant texts and reading multimodal text which may consist of videos, podcasts, etc. (Afflerbach & Cho, 2010). Therefore, with one major exception, there is little difference between the components of guided reading as students are reading the text. As students are reading text in traditional guided reading, typically, there is little to no conversation that occurs among students. Discussion of the text and targeted teaching points typically occurs after all students have read the text. However, when teaching online research and comprehension skills during guided reading, student collaboration is imperative to student success (Coiro, Sekeres, Castek, & Guzniczak, 2014). Consequently, in online guided reading, student collaboration and social interactions must occur during and after students read the text.

Online guided reading provides students with the supports they need to successfully navigate the complexities of online research and comprehension, making it a complementary instructional approach to address these skills. When comparing the components of traditional guided reading to online guided reading, it is clear that there are many similarities, yet many differences. As a result, I have proposed a reconceptualized version of Fountas' and Pinnell's

(2012) guided reading framework specifically for teaching online research and comprehension skills (see Table 7). The three main portions of guided reading, before, during, and after reading remain intact, although the components have shifted slightly to reflect changes necessary for instruction in online research and comprehension skills. This section describes the revised framework.

Table 7

Reconceptualizing Fountas and Pinnells' (2012) Guided Reading Framework for Online Research and Comprehension

Parts	Elements
Before Reading	<ul style="list-style-type: none"> • Select topic or concept • Introduce the topic or content or review previous online strategies • Teaching points <ul style="list-style-type: none"> ○ Explicit strategy instruction ○ Teacher think alouds
During Reading (Fluid movement between elements)	<ul style="list-style-type: none"> • Search for information • Read single webpages, websites, and across websites • Discuss findings among teacher and students • Teacher prompts and supports students' strategic actions
After Reading	<ul style="list-style-type: none"> • Reflect on process <ul style="list-style-type: none"> ○ Discussion of strategies ○ Points to remember

Reconceptualizing Guided Reading

Before Reading

This portion of the framework includes teacher selection of the concept or topic of inquiry, introduction to the topic or brief review of previous strategies, and explicit teaching points. The teacher should begin by selecting a relevant topic or concept for the inquiry

investigation. For example, the teacher may examine current or upcoming social studies or science units as a good starting point to determine a topic or concept. Depending on the proficiency of students, the teacher may select a teacher-generated question or problem based on the topic or elicit student-generated questions or problems for study. Next, as an added component to online reading, the teacher may choose to begin each lesson with a brief introduction of the topic to provide relevant background knowledge or a review of previous online strategies students may need to employ in the current lesson. Finally, the teacher delivers brief, targeted instruction (teaching points) on explicit strategies for online research and comprehension. As noted previously, Coiro (2011b) condones the use of teacher think alouds to model explicit strategies, provide students with academic language, and promote metacognitive thinking about strategy use that improves comprehension of the text.

During Reading

This portion of the lesson includes reading, discussion, and teacher prompting and involves students in completing all five strategies, not necessarily in the same lesson, that have been identified as necessary for online research and comprehension: identifying a problem or question, searching for and locating information, critically evaluating information, synthesizing information, and communicating information (Leu et al., 2013). As the students are engaging in work with these strategies, the teacher's role is to prompt and support students by modeling, supporting, or confirming their strategic actions. Coiro et al. (2014) conducted a study that examined the effects of upper elementary students' social interactions on strategy use during an online inquiry task and discovered that student discussions centered on inferring, integrating, evaluating, and interpreting information and the strategies they used for these processes resulted

in much more productive work and increased student learning. Consequently, this portion of the reconceptualized framework will require teachers and students to flexibly move between the elements of reading, discussing, and teacher prompting.

After Reading

This portion of the framework includes reflection, an added component necessary for online research and comprehension. Coiro (2011b) found that skilled online readers often reflect on their processes by “summing up key ideas, making connections, looking deeper, asking questions, and contributing their own ideas in response to the posed challenge” (p. 109). Reflection also aids online readers in communicating their thoughts and findings to others, a key component of online research and comprehension. As a result, the after reading portion of the reconceptualized framework asks the teacher to have students reflect on the processes and strategies they engaged in during the lesson. Students should discuss the strategies they used throughout the lesson and conclude with one to three points students should remember and take away from the lesson.

Summary

The fourth-grade English/Language Arts teacher who participated in this case study found that students were highly engaged as she integrated online research during her guided reading group. During the two-week study, the teacher’s lessons focused on computer and web navigation basics, analyzing questions, locating information, and reading information on websites. Analysis of the data resulted in clear role changes for both the teacher and students during the implementation of online guided reading and helped to define challenges the teacher

faced. Students were highly active participants during these lessons, often relying on each other to share strategies and information through student led collaborative discussions. Meanwhile, the teacher acted as a facilitator by modeling her thinking and guiding students' thinking as she asked strategic questions and provided targeted prompts. However, the teacher and students also faced many challenges including technology issues, barriers from students' lack of computer knowledge, extensive time for lesson implementation, and lack of student involvement during lessons. Overall, the components of guided reading that best supported students' online research and comprehension skills were the explicit teaching points, discussion, and teacher prompting. Findings from the case study data supported the development of the reconceptualized framework for online research and comprehension skills, also referred to as online guided reading in this chapter. This study led to my final design of the online guided reading framework used to create the base curriculum for students in upper elementary (fourth and fifth grades) as well as the development of the educative features for teachers in the upper elementary grades presented in the educative curriculum materials described in Chapter 3.

CHAPTER 3 THE EDUCATIVE CURRICULUM DESIGN

Introduction

The goal of this dissertation in practice (DiP) was to create an educative curriculum introducing online research and comprehension skills to upper elementary students. It was also intended to provide teachers with knowledge that will improve their understanding of online research and comprehension skills and aid their pedagogical design capacity as they make instructional decisions throughout the curriculum. Therefore, the overall goal of the educative curriculum was to increase student and teacher knowledge of, and skill with, online research and comprehension. The purpose of the educative curriculum was to provide a solution to a complex problem of practice: the need to provide students with explicit instruction in digital literacy skills, specifically related to online research and comprehension. Although I created this educative curriculum to address the nonexistent efforts to incorporate scaffolded practice in online research and comprehension skills in intermediate, (fourth- and fifth-grade) classrooms at CES, its design is intended to meet the needs of students and teachers in diverse settings.

Many organizations are calling for high school graduates who are equipped with skills to research, manage, and process information from multiple sources, and communicate effectively with others through a variety of sources (International Reading Association, 2009; Partnership for 21st Century Skills, n.d.; Wagner, 2008). Yet, researchers have shown that students are not being appropriately prepared with online research and comprehension skills in our schools today (Leu et al., 2015). A major factor impacting this problem is that teachers do not possess the knowledge and skills to effectively address online research and comprehension skills in the intermediate grades (Hutchison, 2012; Hutchison & Reinking, 2011). However, educative

curriculum materials provide “just in time learning” that allows teachers to construct and integrate their knowledge of varied pedagogical practices as they integrate new content as well (Bismack, Arias, Davis, & Palinscar, 2014; Davis & Krajcik, 2005; Davis et al., 2014).

Although the original intention of this DiP was to create a complete curriculum, I found that the intricacies of each lesson’s design were quite tedious. Therefore, the scope of the project proved to be too large to complete in the allotted time. Consequently, I created a curriculum content map and seven complete lessons that will serve as the base design framework for the entire educative curriculum to be finished post-doctorate. In this chapter, I explore the design elements of the curriculum content map and seven lessons and suggest a plan for implementation of the curriculum.

Theoretical Foundations

Several theoretical frameworks, New Literacies theory, the TPACK model, and guided reading, surrounded the design of this curriculum. Each of these frameworks contributed basic assumptions about the curriculum components and served to outline the focus of the curriculum.

New Literacies Theory

After identifying that new technologies are shaping the way individuals access and communicate information in the 21st century, Leu and his colleagues (2013) developed a dual level theory to provide educators with common assumptions and principles for thinking about how these new literacies are changing education and the way we view the world today. Lowercase theories explore specific areas of new literacies such as online research and comprehension. Broad assumptions and principles that relate to the multiple, ever changing

nature of different technologies are referred to as uppercase theories. These broad assumptions and principles examine common findings among multiple lowercase theories, such as understanding the Internet as a tool that is redefining literacy and learning, identifying the role changes for teachers in new literacies classrooms, and recognizing that new technologies require a new set of literacies, strategies, and social practices (Leu et al., 2013).

While still developing, the lowercase theory of online research and comprehension “frames online reading comprehension as a process of problem-based inquiry and includes the new skills, strategies, dispositions, and social practices that take place as we use information on the Internet to conduct research to solve problems and answer questions” (Leu et al., 2013, p. 1163). Lowercase theory identifies five key practices that define online research and comprehension, used as the basis of the student objectives and more fully described later in this chapter. In addition, the following aspects of online research and comprehension have been revealed by research:

- Online research and comprehension is a self-directed process of text construction and knowledge construction.
- Online research and comprehension is not isomorphic with offline reading comprehension; additional skills and strategies appear to be required.
- Online contexts may be especially supportive for some struggling readers.
- Adolescents are not always very skilled with online research and comprehension.
- Collaborative online reading and writing practices appear to increase comprehension and learning. (Leu et al., 2013, p. 1164)

New Literacies theory, both uppercase and lowercase, provided a lens for understanding how new technologies are changing views of literacy and associated instructional practices in the creation of this educative curriculum.

Technological Pedagogical Content Knowledge (TPACK) Model

Building off of the Pedagogical Content model, Mishra and Koehler (2006) developed the TPACK model (Figure 1) to depict the complexities and interrelationships between knowledge involved in instructional planning with technology. This model posits that three broad bases of knowledge are necessary for effective technology integration—technological knowledge, pedagogical knowledge, and content knowledge (Mishra & Koehler, 2006; Koehler & Mishra, 2009). Technological knowledge includes knowing how to use different devices (hardware, software, and presentation tools) and adapt to and learn new, ever-changing technologies (Mishra & Koehler, 2006). Pedagogical knowledge refers to skills specific to organizing and managing teaching, such as having knowledge of specific learning processes, teaching strategies, classroom management techniques, instructional approaches, and assessment practices (Koehler & Mishra, 2009). Content knowledge involves deep knowledge of discipline-specific content and habits of thinking required by the field (Koehler & Mishra, 2009).

Though it is important for teachers to have knowledge in each of these essential areas, it is insufficient to rely solely on one specific body of knowledge for effective teaching. “The introduction of digital technologies has changed the methods and techniques for acquiring, representing, and manipulating knowledge in almost all disciplines” (Kereluik, Mishra, Fahnoe, & Terry, 2013, p. 132). The TPACK model implies that as teachers actively design curriculum using content knowledge and pedagogical knowledge they must make decisions on *how* to best

incorporate technology into the curriculum, with an emphasis on *when* and *why* to use specific technologies for a particular concept or teaching approach (Kereluik et al., 2013; Koehler & Mishra, 2009). Therefore, when designing the educative features, the TPACK model provided a framework for considering the specific needs of teachers and the types of supports that would enhance teachers' decision-making skills as they enacted the curriculum.

Guided Reading Framework

Guided reading is a popular instructional framework used by teachers to guide their work with students during small group reading instruction (Fountas & Pinnell, 2012). According to Fountas and Pinnell (2012), "the goal of guided reading is to help students build their reading power—to build a network of strategic actions for processing texts" (p. 272). Within this framework, teachers are required to select instructional level texts for different groups of students based on the reading level and needs of the small group, read a variety of texts with students while prompting and supporting students' strategic reading actions, and provide targeted instruction on reading strategies, skills, and actions that will develop each group's ability to process increasingly more complex texts over time (Fountas & Pinnell, 2001, 2012).

In the creation and implementation of guided reading lessons, teachers must make many complex teaching decisions. When planning for these lessons, teachers must analyze multiple forms of data to form groups of students with like reading abilities and then select texts that are appropriate to the content, goal, and varying reading levels within the group (Fountas & Pinnell, 2012). Next, during the implementation of these lessons, teachers must make many quick teaching decisions in response to their interactions with their students (Schwartz, 2005). For example, when listening to a student read aloud, the teacher must quickly identify and analyze

the errors the child makes when reading, speculate on the cause of the error, and determine if and how to provide immediate feedback that will guide the students to engage in strategic reading actions. When providing feedback, the teacher may choose to model a strategic action for the students, guide the student to engage in a strategic action by providing a prompt or cue, or confirm a student's use of a strategic action (Schwartz, 2005). In addition, the teacher must determine how much support to provide for each student based on the student's rate of success in implementing the strategy during past lessons or assessments (Schwartz, 2005). These decisions must be made quickly in response to interactions with each individual student; nevertheless, these teaching decisions are truly the heart of the guided reading lesson because they continually extend each student's abilities (Fountas & Pinnell, 2012).

Key Terms and Concepts

The key terms provided in this section represent concepts that are central to this educative curriculum design. These terms are meant to provide the reader with necessary background knowledge of the terms and ensure a clear, consistent understanding of each term's usage in relation to this design project. The definitions for the terms are listed alphabetically.

Backwards design. Backwards design is a three-stage approach to planning curriculum units in which designers first start with the desired results, then consider pieces of evidence that would show mastery of or achievement towards the identified results, and lastly design instructional activities and learning experiences that will help students achieve the desired results (Wiggins & McTighe, 2005).

Educative curriculum. Educative curriculum materials are curriculum materials that also place teachers as learners by embedding features and supports within the curriculum to promote teacher learning (Davis & Krajcik, 2005).

Internet reciprocal teaching (IRT). IRT is an instructional approach found to be effective in teaching online research and comprehension skills, which involves the teacher and students discussing and demonstrating their own strategy use when conducting online research (Castek, Coiro, Henry, Leu, & Hartman, 2015).

Online research and comprehension skills. Online research and comprehension skills refer to the five processing practices identified as necessary for effective reading and learning on the Internet: (a) identifying research questions or a problem, (b) searching for and locating information, (c) critically evaluating information, (d) synthesizing information, and (e) communicating information (Leu et al., 2013).

Think alouds. A think aloud is an instructional technique teachers use to model their “in the head” thinking processes while reading a text by pausing at strategic points when reading the text aloud to explain what they are thinking as they use a specific comprehension strategy (Coiro, 2011b).

Scope and Sequence of the Curriculum

Several key design specifications, shown in Table 3, drove the development of this curriculum in function and usage. In terms of the function, I designed the curriculum to be educative for students and educative for teachers in upper elementary (fourth- and fifth-) grades. Although all curriculum materials are meant to increase student knowledge, not all curriculum materials provide teachers with opportunities to increase their own knowledge of content,

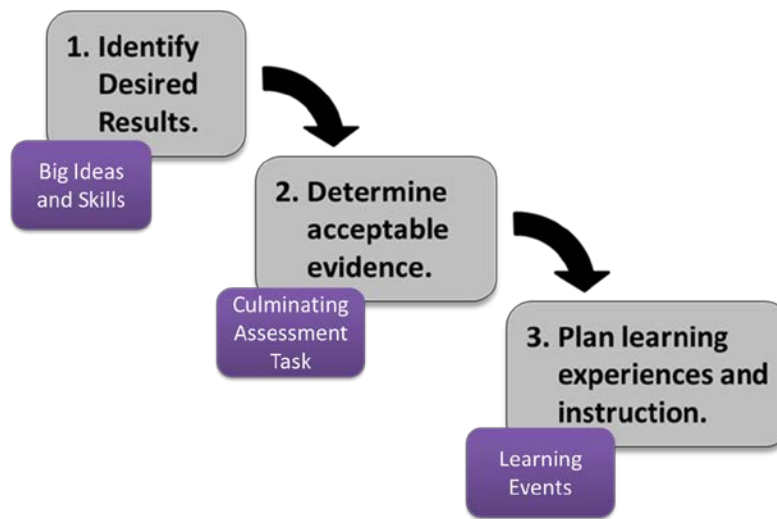
pedagogy, and technology. Davis and Krajcik (2005) referred to materials that provide opportunities for teachers to increase their pedagogical design capacity as educative curriculum materials. Educative curriculum materials provide teachers with “just in time” learning opportunities that build and integrate their current knowledge with new knowledge through educative features (Davis & Krajcik, 2005). In turn, these educative features support teachers in instructional decision-making that is imperative within the guided reading framework. These educative features are described in more depth in this section.

In terms of usability, I designed the curriculum to be easy to use and adaptable to student needs. Online research and comprehension skills do not necessarily develop in a linear fashion (Coiro & Dobler, 2007; Eagleton & Dobler, 2015). In addition, the nature of guided reading posits that the teacher must meet each group of students where they are to systematically build their skills from their strengths (Fountas & Pinnell, 2001). Accordingly, I organized the curriculum into clusters based on key skills necessary for the development of online research and comprehension skills. This organization allows for teachers to flexibly choose among lessons when they identify specific student needs. A curriculum map and decision making if-then charts help teachers easily navigate to specific lessons. These features are further discussed in this section.

Prior to the initial design of the curriculum materials, I reviewed other curricula as models for my curriculum design. The core reading program used in PCPS was *Journeys* by Houghton Mifflin Harcourt (2014). This program included leveled readers with teacher guides written in consultation with Irene Fountas. I examined these teacher guides as a model for creating the base lesson materials that lead teachers through the components of an online guided

reading lesson. Another curriculum that I used as a teacher was the *Units of Study for Teaching Writing* series by Lucy Calkins (2005). This series provided educative features that helped me learn more about writing workshop instruction as a beginning teacher such as lesson overviews that explained the rationale for the lessons and how the lesson fit into the overall unit, narratives of classroom practices, explicit teaching plans with specific language to use in instruction, examples of student work, and teaching tips and ideas for modifying the lessons. Before designing the curriculum, I reflected on how I used these curricula as a teacher and a literacy coach and how other teachers at CES used the curricula to determine what elements may be most effective in my design.

Wiggins and McTighe (2005) advocate the use of a backwards design approach when planning curriculum. The backwards design process leads curriculum designers through three distinct stages (see Figure 4). First and foremost, curriculum designers must identify the big ideas and skills that are the goals of the curriculum. Next curriculum designers consider the culminating assessment task and determine other sources of evidence to assess the extent to which students have met the goals of the curriculum or unit. Finally, curriculum designers develop lessons and activities using appropriate teaching methods that build in a logical sequence to help students achieve the identified goals, or big ideas and skills (Wiggins & McTighe, 2005). I used a backwards design process in the creation of this curriculum, with student and teacher objectives being identified first, a culminating performance assessment second, and a subsequent curriculum map outlining the lessons and individual lessons that chunk the objectives of the curriculum into manageable learning targets occurring third.



Source. Wiggins & McTighe (2005)

Figure 4. Stages in Backward Design Process

Student Objectives of the Educative Curriculum

Several bodies of research led me to the development of the objectives for teachers and students. Current research on the five key strategies for online research and comprehension was the driving factor for student objectives: (a) identifying research questions or a problem, (b) searching for and locating information, (c) critically evaluating information, (d) synthesizing information, and (e) communicating information (Castek, 2008; Castek et al., 2011; Coiro, 2011a; Coiro & Dobler, 2007; Coiro et al., 2014; Leu et al., 2008; Leu et al., 2013; Kuiper & Volman, 2008; Zhang & Duke, 2008). Given that the curriculum is set within the guided reading framework with the main focus on building strategic reading actions, I focused the emphasis of the curriculum on the first four strategies with minimal emphasis on communicating information. In addition, knowledge of and aptitude for basic web searching skills are essential for more

complex online research (Kereliuk et al., 2013); therefore, foundational skills, such as opening new tabs and windows and toggling between applications and tabs were also addressed in the scope of the curriculum.

Additionally, as with traditional reading strategies, online research and comprehension skills are affected by a student's disposition, or attitudes and beliefs, towards online reading (Coiro, 2012; Kuiper & Volman, 2008; O'Byrne & McVerry, 2009; Wigfield et al., 2004). In particular, reflection, persistence, and collaboration have been identified as the three most significant dispositions required by online research (O'Byrne & McVerry, 2009). When searching for information on the Internet, online readers often have to reflect on their current strategies and try new approaches when they are unable to find relevant, reliable, and valid information (Coiro, 2011b). In addition, online readers may have to search multiple key words and phrases to find answers to their questions and sort through a multitude of information to locate and evaluate information in relation to their question or problem. This requires a great deal of persistence. Finally, collaboration with others in real-time and online spaces is an essential skill for sharing new strategies for online research and discussing findings that result from online research. Coiro et al. (2014) found that upper elementary students who effectively engaged with others cognitively and socially during a structure online inquiry demonstrated deeper understanding of the content, made stronger connections between texts and prior knowledge, and provided strong rationales in response to question prompts than students with less effective collaborations. Consequently, I included the development of these dispositions towards reflection, persistence, and collaboration as an important goal of the curriculum.

These important elements led me to the development of the following overarching student objectives:

- Students will develop knowledge of and skill with web searching basics.
- Students will develop strategies for understanding and developing researchable questions and/or problems.
- Students will effectively locate information using search engines and web text structures.
- Students will critically evaluate Internet information for bias, author's stance, reliability, and accuracy.
- Students will utilize note-taking strategies to synthesize information within and across web sources.
- Students will develop a reflective stance, show persistence, and collaborate with others during online research.

Teacher Objectives of the Educative Curriculum

Teacher knowledge of and self-efficacy with technology greatly influences the extent of technology integration (Ladbrook & Probert, 2011; Pan & Franklin, 2011; Wu & Wang, 2015). However, findings from teacher self-reported surveys showed that teachers themselves felt they lacked appropriate knowledge and skills to successfully incorporate technology into their classrooms (An & Reigeluth, 2011-2012; Hutchison, 2012; Hutchison & Reinking, 2011; Pan & Franklin, 2011). Increasing teacher knowledge of the skills, strategies, and dispositions needed for online research and comprehension, helping teachers develop their own skill with technology, and supplying teachers with basic trouble-shooting techniques was an explicit goal of this

curriculum. Therefore, using the TPACK model to frame the needs of teachers, I developed the following objectives to guide the design of the educative features in this curriculum:

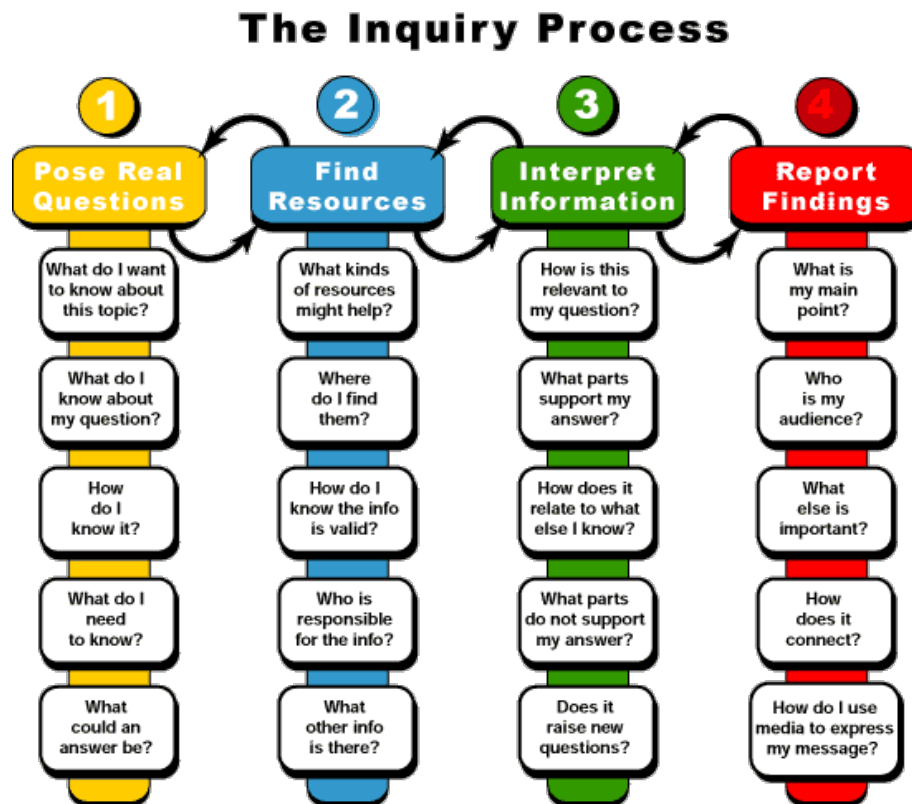
- Teachers will reflect and expand on their own abilities with online research and comprehension skills.
- Teachers will understand the skills, strategies, and dispositions needed by students to engage in online research and comprehension and common misconceptions of students.
- Teachers will identify instructional strategies and approaches for teaching students how to understand and generate questions/problems, search for and locate information, critically evaluate and synthesize information, and note-taking strategies for online texts.
- Teachers will learn how to evaluate and respond to students' progress with online research and comprehension skills.
- Teachers will identify basic trouble-shooting procedures to employ when technical devices fail to operate correctly.

Culminating Performance Task

According to Wiggins and McTighe (2005), true learning results when students are able to transfer the knowledge and skills they learned to authentic situations. Therefore, “assessment for understanding must be grounded in authentic performance-based tasks” (Wiggins & McTighe, 2005, p. 153). Performance-based tasks are set in real-world situations, require students to use their repertoire of knowledge and skills to address challenges or solve problems, and provide students with opportunities to receive feedback and revise their work (Wiggins &

McTighe, 2005). Inquiry projects are one such source of evidence to have students demonstrate proficiency with the online research and comprehension skills they will acquire during the course of this curriculum. According to Grabe and Grabe (2000), “inquiry involves finding sources of information appropriate to a task, working to understand the information resources and how they relate to the task, and then . . . applying this understanding in a productive way” (p. 21).

I designed this curriculum to be adaptable to a wide range of subject-neutral concepts covered in upper elementary classrooms. I included suggestions for research topics within the lessons; however, these suggestions may be easily replaced with concepts currently under study. Therefore, the culminating performance task for this curriculum, an inquiry project, may also be adapted for a variety of concepts or self-selected by students. I provided the following guidelines for developing an inquiry project within the curriculum so that the culminating assessment may be easily differentiated to fit the needs and content learning goals of a diverse set of classrooms. Figure 5 provides a visual that leads students and teachers through the inquiry process and serves as the basis for the guidelines provided in this curriculum.



Source. YouthLearn Initiative (Education Development Center, 2016)

Figure 5. The Inquiry Process

Designing a Culminating Inquiry Project as Assessment

The inquiry process involves asking questions, gathering and synthesizing information, and sharing the results with others (Owens, Hester, & Teale, 2002). Eagleton and Dobler (2015) recommend starting with the following questions to guide inquiry projects:

- What do you wonder about?
- What do you do to seek answers?
- How do you share what you have learned with others? (p. 199)

Typical inquiry projects allow students to select their own topic of interest to research; however, inquiry projects may begin with a teacher-selected topic or question. For example, a teacher may ask students to explore the topic of Hunger in America. Once a topic is selected, have students formulate questions about the topic and begin their research. Since the purpose of the project is to assess students' online research and comprehension skills, require students to select and use a predetermined minimum number of Internet sources for their inquiry project. As students are interacting with, evaluating, and synthesizing the texts, ensure they are using note-taking strategies, which may be collected as part of the assessment process. Finally, allow students to create a final project that pushes students to make connections, examine what the information means, and how it can be used. The final product of the inquiry project may be predetermined by the teacher (such as a Powerpoint presentation), provide student choice (such as a menu of products), or allow the student the freedom to create a product that best represents their topic.

Curriculum Map

An important educative feature that helps teachers consider ways to relate units and concepts within a curriculum is a curriculum map (Davis & Krajcik, 2005). The previously listed student objectives provided the overarching goals of the curriculum, but each goal encompasses a myriad of specific skills and strategies leading to proficiency with the overarching goal. Within the curriculum map, these specific skills and strategies were referred to as learning targets. The learning targets were identified as performance tasks determined using the TICA checklist. The TICA checklist, developed by Leu et al. (2008), categorizes online research and comprehension skills into two phases. Phase one skills include basic computer and web searching foundational skills that must be acquired prior to instruction in online research

and comprehension skills, such as opening applications, locating a search engine, and using icons to navigate a computer and web browser (Leu et al., 2008). Phase two skills include specific knowledge and skills related to the five previously identified processing strategies identified in research and used as the basis of the student objectives in this curriculum (Leu et al., 2008).

An excerpt of the original curriculum map developed prior to designing initial lessons is included in Table 8. To create the initial curriculum map, I clustered learning targets from the TICA checklist together to form lessons centered on a specific concept. These concepts were then linked to the ISTE standards for students, referred to as the NETS-S (ISTE, 2008) and the Language Arts Florida Standards (LAFS) (Florida Department of Education, n.d.b). At the time of this DiP, the state of Florida did not have dedicated technology standards to guide instruction. However, ISTE developed a family of standards for a variety of stakeholders, including students, teachers, administrators, coaches, and computer science educators to provide specific guidelines on the skills, knowledge, and approaches each of these stakeholder groups needs for successful teaching and learning of technology skills (ISTE, 2015). Teachers at CES were required to list specific LAFS standards for every lesson they taught in language arts, including guided reading lessons. The LAFS standards were adopted by the state of Florida in 2014 and closely mirror new educational standards that have been adopted in other states (Florida Department of Education, n.d.). These standards state the expectations for what Florida students need to know and be able to do at each grade level. LAFS standards may be accessed at <http://www.fldoe.org/academics/standards/florida-standards/educator-resources.stml>. Though the LAFS standards do not directly address online research and comprehension skills, teachers will notice a clear connection to these standards in the lessons in which they are listed.

However, not all lessons had a clear connection to the LAFS standards. Key terms were included on the initial curriculum map to highlight language that should be used consistently across lessons. I also included optional assessment ideas to help teachers identify whether or not students met the learning targets for each lesson.

Table 8

Initial Curriculum Map Excerpt

ESSENTIAL QUESTION:	How do you find information on the Internet? How do you use information on the Internet?			
CONCEPTS/CONTENT (Outcomes)	LEARNING TARGETS/SKILLS (Performance Tasks)	STANDARDS	KEY TERMS	ASSESSMENTS
Lesson 1: Web Searching Basics <ul style="list-style-type: none"> • Web Searching Basics • General navigation basics • Toggling through the Web 	<ul style="list-style-type: none"> • Locate and open a search engine • Type key words into the correct location of a search engine • Type addresses in the address bar • Use the back, forward, and refresh icons • Maximize/minimize windows • Toggle between windows/tabs 	NETS-S 6.a NETS-S 6.b	Search engine Key word Web address Website Search toolbar Icon Address bar Refresh Back Forward Window Tab Hyperlinks	Formative-Observe students conducting a simple search on a general topic.
Lesson 2: Understand a Question to Generate Key Words <ul style="list-style-type: none"> • Strategies for understanding questions posed • Generating related key words 	<ul style="list-style-type: none"> • Use general strategies to ensure initial understanding of a question <ul style="list-style-type: none"> ○ Reread a question to ensure understanding ○ Paraphrase a question ○ Take notes on a question ○ Think about the needs of the person asking the question • Brainstorm key words related to understanding of a question: <ul style="list-style-type: none"> ○ Topic and focus ○ Single and multiple key words ○ Phrases 	LAFS.4.RI.1.2 NETS-S 4.a	Question Paraphrase Key words/phrases	Formative-Ask students to paraphrase a given question and generate a related key word or phrase.

After the creation of the initial lessons, it was clear that the curriculum map needed to be revised for many reasons. Findings from the pilot study showed that guided reading lessons with technology took longer to implement. Based upon this finding, I decided to revise the

curriculum map because each of the clustered lessons covered too much content to realistically be taught within one 15- to 20-minute guided reading lesson. Another reason was the initial curriculum map was linear in nature and was likely to lead teachers to believe the lessons needed to be completed in order. However, the guided reading context requires teachers to target lessons to the specific needs of a group of students (Fountas & Pinnell, 2012). Just as with traditional reading skills, students will have varying skills with and knowledge of online research and online reading. Therefore, I revised the curriculum map to create a menu of lessons that could be used flexibly by teachers. Instead of a linear order, I clustered the lessons into strands with each strand representing skills and strategies needed for online research. The strands are represented in the following categories: (a) web-searching basics, (b) identifying a question/problem, (c) locating information, (d) critically evaluating information, and (e) synthesizing information. I retained all of the elements of the initial curriculum map with one additional element added to indicate the types of educative features (each is discussed in more depth in the next section) embedded within each lesson. Table 9 shows the revised curriculum map with the seven lessons written for this DiP included.

Table 9

Revised Curriculum Map

ESSENTIAL QUESTION	How do you find information on the Internet? How do you use information on the Internet?					
WEB-SEARCHING BASICS						
CONCEPTS/CONTENT	LEARNING TARGETS/SKILLS	STANDARDS	KEY TERMS	ASSESSMENT	EDUCATIVE FEATURES	
Web Browser and Search Engine Layout	<ul style="list-style-type: none">• Locate and open a web browser• Locate and open a search engine• Understand the difference between the web address bar and the search toolbar• Type key words into the correct location of a search engine• Type web addresses in the address bar	NETS-S 6.a NETS-S 6.b	Search engine Web address Website Search toolbar Icon Address bar Hyperlink	Observe students conducting a simple search on a general topic.	<ul style="list-style-type: none">• Teaching tip on web browsers	
General Navigation Basics	<ul style="list-style-type: none">• Identify and explain the purpose of the back, forward, and refresh icons• Use the back, forward, and refresh icons	NETS-S 6.a NETS-S 6.b	Icon Hyperlink Back Forward Refresh	Observe students using the back, forward, and refresh icons.	<ul style="list-style-type: none">• Teaching tip on error codes• Background knowledge on error codes	
Toggling Through the Web	<ul style="list-style-type: none">• Open new windows and maximize/minimize windows in a web browser• Open new tabs and toggle between tabs	NETS-S 6.a NETS-S 6.b	Icon Hyperlink Back Forward Refresh	Observe students opening and toggling between tabs and windows	<ul style="list-style-type: none">• Misconception alert on tabs vs. windows• Background knowledge on keyboard shortcuts	

IDENTIFYING A QUESTION OR PROBLEM

CONCEPTS/ CONTENT	LEARNING TARGETS/SKILLS	STANDARDS	KEY TERMS	ASSESSMENT	EDUCATIVE FEATURES
Strategies for Understanding Questions	<ul style="list-style-type: none"> • Use general strategies to ensure initial understanding of a question <ul style="list-style-type: none"> ○ Reread a question to ensure understanding ○ Paraphrase a question ○ Take notes on a question ○ Think about the needs of the person asking the question 	LAFS.4.RI.1.2 NETS-S 4.a	Question Paraphrase	Provide students with a teacher generated question and have them paraphrase the question in written or oral format.	<ul style="list-style-type: none"> • Background knowledge on paraphrasing as a reading comprehension skill • Misconception alert on needs of the question asker • Teaching tip on complexity of questions

LOCATING INFORMATION

CONCEPTS/ CONTENT	LEARNING TARGETS/SKILLS	STANDARDS	KEY TERMS	ASSESSMENT	EDUCATIVE FEATURES
Generating Related Key words from Question	<ul style="list-style-type: none"> • Brainstorm key words related to the topic and focus of a question 	LAFS.4.RI.1.2 NETS-S 4.a	Key words Topic Focus	Have students complete the key words worksheet, identifying if key words are strong or weak.	<ul style="list-style-type: none"> • Background knowledge on question/answer relationships • Misconception alert on topic versus focus
Understanding the Structure of a Search Engine Results Page	<ul style="list-style-type: none"> • Understand the structure of a search results page • Identify the features of a search results page • Identify the difference between advertising and sponsored links and those that are not 	LAFS.4.RI.2.5 NETS-S 3.b NETS-S 3.c	Search results page Title Snippet URL Advertisement Sponsored Link	Ask students to identify and name specific features of a search results page.	<ul style="list-style-type: none"> • Background knowledge on features of a search results page

CONCEPTS/ CONTENT	LEARNING TARGETS/SKILLS	STANDARDS	KEY TERMS	ASSESSMENT	EDUCATIVE FEATURES
Understanding Search Engine Results	<ul style="list-style-type: none"> Understand the meaning of bold-faced terms on the search results page Skim results before reading more narrowly Identify if the first item is best to answer their question 	LAFS.4.RI.3.7 LAFS.5.RI.3.7 NETS-S 3.b NETS-S 3.c	Title Snippet URL Advertising/Sponsored Links Bold Words		<ul style="list-style-type: none"> Misconception alert on the first link Teaching tip on sharing strategies

Essential Elements of the Lesson Design

As described in Chapter 2, the guided reading framework provides a supportive and collaborative setting in which to teach online research and comprehension skills. However, findings from the pilot study confirmed that role of the teacher and components of guided reading, as conceptualized by Fountas and Pinnell (2001), must be modified to better accommodate the differences between traditional guided reading and online guided reading. Online guided reading is defined as lessons in which a teacher prompts and supports small groups of students through texts on the Internet as they search for and synthesize information to solve a problem or answer a question. While the three main portions of Fountas and Pinnell's guided reading framework, before, during, and after reading, are present in each of the base lessons developed, the format within each of these portions has been altered to fit within a reconceptualized guided reading framework for online research and comprehension. I developed the lessons for this curriculum using a reconceptualized guided reading framework for online research and comprehension and design heuristics for educative curriculum materials recommended by Davis and Krajcik (2005). A complete lesson is provided at the conclusion of this section. All seven completed lessons may be found in Appendix C. This section discusses the design of the essential elements included in the curriculum lessons and educative features.

Lesson Overview Page

Preceding each lesson, I included a lesson overview page to help teachers understand the rationale for the lesson, understand the big ideas of the lesson, identify the key terms used, make recommendations for assessment of student learning, and provide suggestions for differentiating

(extending or adapting) the lesson for different learners' needs. Although the curriculum map helps teachers see the big picture of a curriculum and consider the overall scope of the content, other features are needed to support and develop teachers' understanding of the relationship and connection between content presented in different lessons (Ball & Cohen, 1996; Davis et al., 2014; Davis & Krajcik, 2005). I included the overview component to help teachers consider how the content presented in that particular lesson builds on, supports, and connects to content in other lessons within the curriculum. In addition, the overview provides a rationale for the importance of the content within the larger context of online research and comprehension skills. Features that support assessment practices have been proven to be especially effective with beginning teachers, as these features support teachers in determining what students know and help teachers anticipate students' ideas (Davis et al., 2014). The overview page provides recommendations for assessing student knowledge of the content taught, helping teachers to identify students' skills with the most important content of the lesson. Finally, design specifications for this project stated that the curriculum should be adaptable to a variety of student needs. Therefore, I provided extensions and scaffolds in the overview page to guide teachers as they differentiate the lessons based on student needs and responses to previous lessons.

Within Lesson Elements

Within each of the lessons, I provided step-by-step directions for teachers as they guide students in understanding and applying the content being taught. According to Hasselbring (2010), in order to retain information in long-term memory, it must first be chunked into small sets of information so that it can first be held in working memory, which has limited

storage capacity. Therefore, I created the step-by-step directions to chunk the information to be learned into manageable sets for students to process the information.

Under the before reading teaching points, I included at least one teacher think aloud meant to explicitly model the reading and thinking processes online readers use as they engage in the skills associated with online research. Think alouds are an instructional technique in which teachers express their thoughts while performing a task (Kymes, 2005). Coiro (2011b) found that think alouds help students “anticipate challenging online reading situations and carefully think about ways to extend their use of printed text comprehension strategies to Internet reading contexts” (p. 114). When teachers explain their actions, the purpose for their actions, and clarify how to understand and integrate information into their prior knowledge, students become more metacognitive thinkers better aware of their own in the head thinking strategies and processes (Kymes, 2005). I incorporated the think alouds to guide teachers in verbalizing their own thinking strategies and processes to students.

Conversely, asking students to verbalize their mental processes allows the teacher to evaluate the effectiveness of students’ strategies and benefits the reader by encouraging self-reflection (Kymes, 2005). In the during reading discussion, I incorporated reminders to invite students to think aloud, sharing their personal strategies and attempts as they engage with the content. This time for collaboration is also an essential component of Internet Reciprocal Teaching (IRT). IRT is an instructional approach, used as a model in the development of this curriculum, in which the teacher and students take turns leading discussions and demonstrating strategy use when conducting online research (Castek et al., 2015). Similar to the Reciprocal Teaching approach (Palinscar & Brown, 1994), IRT focuses on the strategies of online research

and comprehension identified in the student objectives. Coiro (2011b) has recommended engaging students in a stage of reflection on the targeted skills and strategies demonstrated in teacher and student think alouds by asking prompting questions. I incorporated this reflection stage in the after reading portion of the lessons with suggested language to prompt the discussion. The pilot study revealed that the role of the teacher during online guided reading became that of a guide rather than a facilitator, so opportunities for student led discussion and collaboration were at the heart of this curriculum and were featured prominently in the during and after reading portions of the lessons.

Within each of the during reading portions, I incorporated suggested prompts for supporting students' strategic actions during online research. Frequent, immediate feedback has been shown to greatly improve students' academic performance (Hasselbring, 2010). Guided reading provides a highly supportive context for students because teachers are able to provide immediate feedback as they observe student actions (Schwartz, 2005). However, this immediate feedback requires teachers to make fast paced instructional decisions on the amount and type of support to provide; and this involves complex teaching decisions, especially for new, inexperienced teachers (Schwartz, 2005). Fountas and Pinnell (2001) have recommended the use of three types of prompting that offer differing levels of support to readers: model, guide, or confirm. Therefore, to aid teachers in making these quick decisions and help them develop a repertoire of prompting responses specific to online research and comprehension skills, I included prompts to model, guide, and confirm student's actions (see Table 10). The prompts for modeling explicitly show students how to engage with a strategy to perform the task, while the prompts for guiding provide reminders or ask strategic questions to lead students to enact a

strategic action. Confirmation prompts provide specific praise and are to be used when a student successfully engages in a strategic action, especially when the student appears unsure or forgets to use a particular strategy.

Table 10

Sample of the Suggested Prompts

Model	Guide	Confirm
<ul style="list-style-type: none"> Paraphrase your question first to see what words are used in both questions. You could paraphrase this question like . . . In your question, the topic of the question is. . . In your question, the focus of the question is . . . 	<ul style="list-style-type: none"> As you read the question, think about the topic. Now think about the focus of the question. Does the answer provided confirm your key words as the topic and focus of the question? Remember, you should only have a couple of key words. 	<ul style="list-style-type: none"> You did a great job of determining the topic and focus of the question as key words. Good work. In your identified key words, I see the topic of the question . . . and the focus of the question . . .

Other Educative Features

Davis et al. (2014) defined educative features as “texts and graphics that can be incorporated into curriculum materials with the intention of supporting teacher learning” (p. 25). Within the lesson itself, on the left hand side of the pages, there are elements that may be considered educative, such as the think aloud language provided in the before reading portion, the suggested prompts in the during reading portion, and the suggested language for discussion in the after reading portion. These embedded features help build teachers’ ability to make instructional decisions on how to differentiate the curriculum to fit the needs of the student group

while implementing the lesson, or stated another way, “being able to make good decisions about changes . . . to adapt curriculum materials for local conditions” (Davis & Krajcik, 2005).

However, Davis and Krajcik have also recommended adding educative features that support teachers’ learning of the content or subject matter knowledge and help teachers anticipate and understand student misconceptions and student responses to the instructional activities included within the lessons. To address these recommendations, I designed the following educative features specifically for this curriculum and included the features as popout boxes located under the teacher notes heading to the right of the lesson:

- *Teaching Tips* – Guide teachers pedagogical knowledge
- *Background Knowledge* – Supports teacher learning of content knowledge
- *Misconception Alerts* – Supports teachers pedagogical content knowledge

I included *Teaching Tips* to guide teachers’ pedagogical knowledge by providing “just in time” advice to support students responses to the lessons. For example, one lesson provides instruction on locating different web browsers on a computer and introduces icons for a variety of web browsers. The following *Teaching Tip* displayed in Figure 6 was provided to guide teachers in determining how many and which web browsers to introduce to students.

Teaching Tip

The most widely used web browsers are Internet Explorer, Google Chrome, Safari, and Firefox. Only display the icons students have access to on their computers.

Misconception Alert!

Students may easily confuse the topic for the purpose and vice versa. Guide students to understand that the topic is the broad subject under examination, while the focus is one aspect of that topic.

Background Knowledge

Keyboard shortcuts are combinations of keys that can be used to perform a task that may also be accomplished through mouse clicks. However, keyboard shortcuts are generally faster to use and increase productivity. Listed below are common keyboard shortcuts every computer and web user should know.

Ctrl + C	Copy highlighted text
Ctrl + V	Paste from clipboard
Ctrl + X	Cut highlighted text
Ctrl + F	Find words in the application
Ctrl + Tab	Toggle between open tabs
Ctrl + S	Save

Figure 6. Educative Feature Examples

Background Knowledge boxes provide support for developing teachers content knowledge of technology, the Internet, online research and comprehension skills, and even general reading skills and strategies. A teacher objective for the curriculum was to help teachers expand their own technological and Internet research skills. The *Background Knowledge* boxes build content knowledge by providing information on specific error codes students may come across during lessons or explaining the purposes of specific features of a search results page. In a lesson that focuses on guiding students to toggle between applications, windows, and tabs, teachers are provided with keyboard shortcuts that help to increase productivity.

Finally, I included *Misconception Alerts* to develop teachers pedagogical content knowledge by helping teachers anticipate student responses that may occur during specific instructional activities or when delivering specific content. Many of the *Misconception Alerts* I developed help the teacher identify confusions or misconceptions students may have during this lesson. To illustrate, in the lesson on generating key words from questions, students are taught to first determine the broad topic of the question and then identify the specific focus of the question within that topic. During this lesson, confusion may easily occur between the topic and the focus of a question. Therefore, as shown in Figure 6, I strategically placed a *Misconception Alert* box within the teacher notes near that part of the lesson to help teachers identify this possible confusion early in the lesson.

In summary, all of these features were meant to enhance teachers' pedagogical design capacity as they enact the curriculum materials by providing supports for instructional decisions (Davis & Krajcik, 2005). Additionally, the guided reading context provides students with supports to develop their strategies for effective online research and comprehension, while also helping them build skills for reflection, collaboration, and the ability to maintain persistence when online research becomes frustrating or overwhelming. A complete lesson containing the lesson overview page, within lesson elements, and other educative features is presented as Figure 7 and is displayed on the following pages.

Understanding Search Engine Results

Overview: Often web searches result in hundreds of thousands of links to related sources. Sorting through this list can be daunting, particularly for students, as readers constantly make decisions about what to read and identify the potential relevance of the content (Eagleton & Dobler, 2015). No matter which search engine used, online readers must identify the title and URL, then carefully read the snippet. The bold words in search engine result snippets are the web searchers key words, helping him/her further identify relevance of the link. In this lesson, students will extend their understanding of the features included on a search engine results page, learn how to better skim search results, and be able to better identify if the first item is best to answer their question.

Learning Targets:

- Students will understand the meaning of bold-faced terms on the search results page.
- Students will understand how to skim the results before reading more narrowly.
- Students will be able to identify if the first item is best to answer their question.

Standards:

- ISTE NETS-S 3.b Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media
- ISTE NETS-S 3.c Evaluate and select information sources and digital tools based on the appropriateness to specific tasks

- LAFS.4.RI.3.7 Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on web pages) and explain how the information contributes to an understanding of the text in which it appears.
- LAFS.5.RI.3.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

Extensions/Scaffolds:

- Repeat this lesson with student-generated key words.
- Repeat this lesson, noticing the features of different search engines.
- Extend the lesson by comparing and contrasting features of different search engines and their results pages.

Key Vocabulary:

Search results page

Advertising/Sponsored Links

Search results

Bold words

Title

Snippet

URL

Before Reading

Teacher Notes

Introduction or Review

1. Project and show students the results of a search from a teacher generated question and key words. Review with students the basic structure of the **search results page**, including where to find the **title**, **snippet**, and **URL** of each link.
2. Have students identify the **advertising/sponsored** links on the **search results page** and explain how they can tell the difference between these links and other **search result** links.
3. Tell students that search engines cannot truly comprehend the key words that you enter like a person can. Therefore, search engines work by matching your key words to words that appear on webpages across the Internet. This is why it is important to closely examine the results to determine which results might best answer your question.

Teaching Points

4. Refer students back to the search results page. Have student copy the key word search on their own devices. Ask students *Do you notice any words that are highlighted on the **search results page**?* Guide students to notice the words in **bold** print.
5. Ask students, “*Why might these words be highlighted?*” Allow students to share their ideas. Guide students to identify that the **bold words** are the key words, or forms of the key words, used in the search.
6. Next, have students look at the **search results**, noting the **bold words**, to hypothesize which link might best answer their question.
7. After a brief discussion, look at the first **search result** (not an **advertising link**). Examine whether or not the first result **snippet** provides insight into answers for the question. Discuss. Then look at a link further down the list (be sure to scroll down a bit past the first few results). Examine whether this link **snippet** provides insight into answers for the question. Discuss. Ask students to think about which link they would choose and justify why.

Misconception Alert!

Students may believe that the first link that comes up in a search results list is the most related to their search. While most web searchers do click on of the first five results, it is often advantageous to skim the entire search results page before clicking that first link.

8. Tell students that the first result may or may not be the best to answer their questions. Therefore, it is always wise to look further down the list for more relevant results.

During Reading

Have students search for information to a single teacher generated question. Have students examine the search results page and discuss which link they would choose to follow next and explain why.

Suggested Prompts

Model	Guide	Confirm
<ul style="list-style-type: none">Look at all of the words that are in bold print. Notice that these are the same	<ul style="list-style-type: none">How do you know that the result is related to your search key words?	<ul style="list-style-type: none">I like how you pay attention to the bold words to see if the

words as your key	• Which search results	result is related to
words or a form of	do you think is most	your key words.
your key words.	likely to answer the	• You looked down the
• In the first result, I	question?	list to see if other
see that it might lead	• Look at the bolded	search results were
to answer to this part	words to see how	more relevant. Great
of the question . . . ,	similar the result is to	work!
but not this part.	your key words.	
• If I look further down		
the list of search		
results , I think this		
snippet is more		
relevant to the		
question because . . .		

Discussion Points



Invite students to discuss and debate their choices which links are most relevant to the question.

After Reading

Reflection

Invite students to share the features of the search engine results that helped them choose which link to visit first. Allow students to discuss how the **bold words** helped them make these decisions.

Suggested Language: *What features of the search results page did you find most helpful when choosing which line to visit first? Did you choose the first link? Why or why not?*

Points to Remember

During the discussion, lead students to:

- Identify the purpose of the bold words

- Share strategies for skimming search results
- Understand that the first link may not always be the best link to answer their question

Teaching Tip

Often web users come up with their own strategies for identifying relevant sources to answer their question. If a student utilizes a strategy that is not highlighted in this curriculum, allow him/her to share the strategy with others.

Encourage other students to try out the strategy and determine how well it works for them.

Figure 7. Example of a Complete Lesson

Implementation Plan

The educative curriculum I designed for this DiP was intended to be used in upper elementary, fourth- and fifth-grade, classrooms as an introduction to online research and comprehension skills that will be critical to these students' future academic careers.

Differentiation is an important concept within guided reading because the goal of guided reading is to continually extend all students' skills through effective grouping based on student needs and supportive lessons that stretch each learner just beyond what he or she can do independently (Fountas & Pinnell, 2012). Therefore, I designed this curriculum to be easily adaptable to a broad range of learners. In this section, I discuss prerequisite knowledge needed by students and teachers to access the curriculum and guidelines for implementing the curriculum.

Prerequisite Skills and Knowledge

In order to effectively implement this educative curriculum, students and teachers must have certain prerequisite skills and knowledge. Leu et al. (2008) recommended that students have adequate typing skills prior to online research. This idea was corroborated in the pilot study findings when the teacher indicated that students' inefficient typing skills were a challenge when implementing online research within guided reading. In addition to sufficient typing skills, students must have basic computer skills including knowledge of how to turn a computer on and off, log in and out of the computers, open specific programs and files using the file manager, open and quit applications, and knowledge of school and classroom rules for computer use. Finally, students must have sufficient decoding ability, spelling skills, and traditional

comprehension strategies so that they are able to transfer their skills to online research (Eagleton & Dobler, 2015).

In their book *Reading the Web*, Eagleton and Dobler (2015) describe a 10-minute Online Web Strategies Assessment that can be conducted individually with students to assess their computer and web-searching skills. To begin the assessment, start with a computer that is turned off. Ask students to search for the answer to a specific question. As the student works with the computer, note the students' ability to operate the computer (turn it on, log in, and open software), typing skills, ability to locate a search engine, enter key words into the search engine, choose a website from the search results list, and find the relevant information. Next, ask students to provide a rationale as to how they know this is "good" information and what they would do next in a research project. Allow the students to work through this process for 10 minutes only, while making notes of their strategic actions (Eagleton & Dobler, 2015). This assessment serves as a preassessment of student skills, helping teachers to determine readiness for specific skills and subsequently group students by ability with online research and comprehension skills. In addition, this assessment may be repeated to determine students' acquisition of online research and comprehension skills in response to instruction.

In addition to knowledge of basic computer and web searching skills noted above, teachers must have additional knowledge of and skill implementing the traditional guided reading framework. Although the educative features of the curriculum work to build teacher knowledge of online research and comprehension skills, it is assumed that teachers have a good working knowledge of the routines and procedures associated with guided reading. Additionally, teachers must be familiar with think alouds as a strategy for modeling mental processes to

students. The educative features of the curriculum provide a basis for thinking aloud when modeling online research and comprehension strategies only. Therefore, teachers must have a baseline understanding of how and when to use think alouds to model thinking processes for students.

If-Then Charts

Due to the fact that the curriculum is set within a guided reading context, I created a menu of lessons to give teachers the flexibility to choose the lesson that best meets their purpose and differentiated needs of the group. As noted within the curriculum map, these lessons are clustered into categories based on skills and strategies needed for online research and comprehension. Each section is accompanied by an if-then chart that guides teachers to a suggested lesson based upon students' navigation techniques they are observing. For example, consider the following scenario. A teacher is having students evaluate the accuracy of a particular source by having them compare information across websites. However, more than half of the group ineffectively open new web browser windows and conduct new searches each time they try to find a new source to compare the information. The teacher notices the struggles that students are having as they try to manage multiple, competing windows of information. Consulting the if-then charts for web-searching basics depicted in Table 11, she notices a lesson on using tabs to manage multiple webpages (Toggling Through the Web). Even though this is clustered in the web-searching basics section of the curriculum, she deems this a necessary skill for students and chooses it as the next lesson she uses for this group to help them become more efficient web users.

Table 11.

Web-searching Basics: If-Then Chart

If students . . .	Then go to lesson . . .
Don't know how to access the Web	Web Browser and Search Engine Basics
Are unable to identify a web browser and/or search engine	Web Browser and Search Engine Basics
Cannot differentiate between the web address bar and search toolbar	Web Browser and Search Engine Basics
Struggle with web browser navigation	General Navigation Basics Toggling Through the Web
Do not know how to go back to a previous webpage they visited	General Navigation Basics
Always ask for help when they come across an error	General Navigation Basics
Have trouble managing multiple webpages at once	Toggling Through the Web
Often ineffectively close windows and reopen them	Toggling Through the Web
Need practice toggling between tabs in a web browser and other windows or applications	Toggling Through the Web

Steps for Implementing the Curriculum

The following steps assist teachers in determining how to use this curriculum in their own classrooms.

1. Begin with a preassessment of students' skill with online research and comprehension skills, using a test such as the 10-minute Online Web Strategies Assessment (Eagleton & Dobler, 2015).

2. Determine student groups based on the results of the assessment, grouping students by like-ability with online research and comprehension skills.
3. Use the if-then curriculum charts to target instruction based on the needs of students and ongoing classroom projects.
4. After students work through all components of the curriculum, administer an end of unit inquiry project, using the guidelines provided in this introductory unit.

Most importantly, I did not design this curriculum to be used linearly. The strength of the guided reading framework is its potential to differentiate instruction for different groups of students based on their strengths and needs. Instead, teachers should use the lessons within the curriculum to design an instructional plan for each group of students based on need and purpose. Therefore, this introductory unit may be implemented as a complete unit, taking approximately four to six weeks to implement, or it may be used periodically throughout the year as needs arise. In addition, this curriculum was designed specifically for upper elementary, fourth- and fifth-grade students and teachers, however, this curriculum may be modified for use in middle school, sixth- through eighth-grade classrooms as well.

Summary

The purpose of this chapter was to explore the design elements of the curriculum content map and seven lessons and suggest a plan for implementation of the curriculum. As illustrated in this chapter, each of the design elements served to meet the overall student and teacher objectives stated within this introductory curriculum unit of online research and comprehension skills for upper elementary students and teachers.

CHAPTER 4 ANALYSIS OF THE EDUCATIVE CURRICULUM

Introduction

Ubiquitous access to information through connected technologies continues to evolve current conceptions of knowledge and what it means to participate in today's global society. The educational experiences that we provide to students should reflect the critical thinking required to locate, evaluate, analyze, synthesize, and communicate information in a variety of sources and formats; yet schools are not properly equipping students with online research and comprehension skills by the time they graduate from high school (Coiro & Dobler, 2007; Greenhow et al., 2009; Leu et al., 2013). At CES, efforts to incorporate scaffolded practice in online research and comprehension skills within the guided reading framework in upper elementary, fourth- and fifth-grade classrooms, were nonexistent. Informed by research and a pilot study, the educative curriculum materials I described and set forth in this DiP were designed to develop upper elementary (fourth- and fifth-grade) students' and teachers' understanding of online research and comprehension skills in order to address the need to provide students with explicit instruction in online research and comprehension skills in schools today. More specifically, the purpose of this DiP was to create a curriculum for CES, with educative features for teachers which introduces online research and comprehension skills to students in the upper elementary grades within the supportive context of the guided reading framework.

Results from the pilot study guided my design of the educative curriculum in many ways. The guided reading framework is a supportive instructional context in which a teacher monitors and directs a group of students to engage in strategic actions when they approach a text; however, the guided reading framework was designed with traditional printed texts in mind

(Fountas & Pinnell, 2001, 2012). The teacher's implementation of online research and comprehension skills during the pilot study showed a variety of unique differences and role changes when online research and multimodal text formats were introduced in a guided reading context. A reconceptualized framework for online guided reading, discussed in Chapter 2 and used as the framework for the base curriculum materials, will allow teachers to guide and support students' navigation skills and strategic actions as they locate, analyze, evaluate, and synthesize information from a variety of Internet sources in response to a question or problem.

I also designed many educative features to enhance teachers' content, pedagogical, and technological knowledge given that much of the research points to a lack of knowledge as a key factor that often impedes successful technology integration efforts as discussed in Chapter 1 (Hew & Brush, 2007; Hutchison, 2012; Hutchison & Reinking, 2011; Kereluik et al., 2013; Van Allen, 2014). A curriculum map and if-then charts help users see the bigger picture of the overall curriculum and guide users in choosing lessons to effectively differentiate instruction based on a particular group's needs. Think alouds, reminders to engage students in IRT approaches, and suggested prompts for providing immediate feedback and supporting students' strategic actions are embedded within each of the lessons. Finally, additional educative features stand to the side of the core lessons in the form of *Teaching Tip* boxes, to guide teachers' pedagogical knowledge, *Background Knowledge* boxes, to support teacher learning of content knowledge, and *Misconception Alert* boxes, to support teachers' pedagogical content knowledge.

Expert Panel Review

Following the development of the curriculum materials described in Chapter 3, I convened an expert panel review as an additional layer of experts to inform the design of these

materials. The purpose of the expert panel review was to examine the extent to which the lessons developed (a) supported teacher and student knowledge of online research and comprehension skills, (b) aided teachers in instructional decision-making when implementing the curriculum, and (c) provided suggestions for future lessons.

Selection Criteria

I initially selected participants for the expert panel review to represent researchers involved in online research and comprehension, a teacher leader in guided reading, key stakeholders in the PCPS digital curriculum department, a teacher and instructional coach involved in PCPS digital pilot schools, and intermediate English/Language Arts teachers at CES. Of this initial list, five participants responded and agreed to participate in the review from the initial invitation email. These participants were comprised of two district instructional coaches in the PCPS digital curriculum department, one intermediate teacher at a PCPS digital pilot school, one instructional coach at a PCPS digital pilot school, and one intermediate English/Language Arts teacher at CES.

Procedures

Each of the five participants received an email with an overview of the purpose, description of the curriculum, guiding questions for their review, and a request to return their review within two weeks. A reminder email was sent to the five participants three days before the review return date. However, only two participants, a district instructional coach in the PCPS digital curriculum department and a CES intermediate English/Language Arts teacher returned their reviews. All other participants explained that other projects they were involved in were too

time-consuming and prevented them from participating in this project. The expert panel review protocol and all accompanying materials are included in Appendix D.

Results

Overall results from the expert panel review were positive. One participant stated, “I find the lessons give teachers just the right amount of support, where they are not insulting to those who are tech savvy, yet are simple and easy to follow for those who are not as comfortable with technology.” Another participant stated, “These lessons provide a needed foundation for successful use of Internet resources.” One feature that the panel review members found particularly beneficial was the if-then chart, indicating that the charts are “helpful for not only students, but (also) teachers who experience the same challenges” because the teacher may use the chart to review the skills before teaching them. As for the educative features included under teacher notes, the reviewers indicated that these features are helpful for “providing things to look out for” and “helpful to teachers in understanding the technical side of the lessons.” However, one reviewer indicated that she did not initially pay much attention to the tips and suggested that these tips be highlighted in a different manner. Another suggestion was to include an additional educative feature within the lessons that highlights troubleshooting tips to improve teachers’ ability to solve low level technical issues and ultimately increase productivity. Other suggestions recommended were the inclusion of a hyperlinked index to make navigation between lessons easier and the use of screen shots and screen captures to model the steps of the lessons.

Throughout the remainder of this chapter, I will discuss the goals of the curriculum, anticipated changes expected as a result of the curriculum implementation, methods of

evaluating effectiveness of the curriculum, considerations for implementing the curriculum, plans for modification of the curriculum, limitations, and anticipated impact.

Educative Curriculum Goals

Within schools today, there is a great need to provide students with explicit instruction in digital literacy skills, specifically related to online research and comprehension. As I developed the content included in these educative curriculum materials as a solution to this complex problem of practice, I kept two broad, essential goals at the forefront of development:

- Build upper elementary students' foundational knowledge of key skills and dispositions necessary for online research and comprehension.
- Develop teachers' content, pedagogical, and technological knowledge of online research and comprehension skills.

These overarching goals guided the development of the more specific student and teacher objectives presented in Chapter 3. However, when analyzed from a broader perspective, it is clear to see how the goals of this educative curriculum provide a solution to some of the factors impacting this complex problem of practice previously presented in Table 2.

As noted in Chapter 1, teachers themselves reported that lack of professional development (PD) on technology integration practices is a large barrier to technology use in the classroom and cause of self-reported lower uses of technology that are associated with 21st century skills such as online research and comprehension skills (Hutchison & Reinking, 2011). Although PD on technology integration does occur in schools and districts across the nation, much of this PD is uninformed by research, generalized to large groups, and highlights how to use specific tools as opposed to instructional approaches or skills associated with meaningful

integration practices (Hutchison, 2012). Hutchison called for PD that is timely, provides time to explore content and practice instructional approaches, provides appropriate background knowledge and rationales, and includes access to extended resources. The design of the educative curriculum materials proposed in this DiP provides just in time resources that afford teachers with background knowledge, rationales, and supportive resources to build their own knowledge of the skills surrounding online research and online comprehension and provide support for implementing the instructional approaches described in the curriculum. These educative materials have been designed so that teachers have timely access to the support and resources they need to effectively implement the curriculum. On the other hand, this curriculum is not meant to completely replace traditional face-to-face PD, but rather support and enhance traditional PD structures.

Additionally, I designed these curriculum materials to build student knowledge on the foundational skills of online research and comprehension so that they are more proficient at locating, analyzing, evaluating, and synthesizing information from multiple, multimodal sources when they enter secondary schools. New educational standards and calls from colleges and business leaders demand that students leave high school better prepared to meet the demands of locating, effectively using, and communicating information in a variety of formats (ISTE, 2007; NGA & CCSSO, 2010; Wagner, 2008). Consequently, educators must begin working with students on these skills even while they are engaging in their own professional learning about online research and comprehension skills. These educative curriculum materials provide the means to build student knowledge alongside teacher knowledge so valuable time is not being lost with students.

Anticipated Changes

Although the target audience for the educative curriculum materials is upper elementary teachers, many key stakeholders are expected to benefit from the educative curriculum. According to the design specifications noted in Chapter 1, the educative curriculum was designed to educate both teachers and students through the base curriculum and added educative features. Therefore, the educative curriculum is expected to have the most direct benefit on upper elementary teachers and students by increasing their respective proficiencies with online research and understanding of essential skills and strategies for online research and comprehension. Another anticipated benefit for upper elementary teachers is an increased awareness of, and proficiency with, instructional approaches for integrating technology into instruction, as well as in their proficiency with low-level trouble-shooting skills for technology issues, which are directly connected to the teacher objectives described in Chapter 3. Finally, teachers will also benefit by being able to better evaluate and respond to students' online research and comprehension skills as they learn how to notice and support students' strategic actions. A more indirect benefit at the school level and district levels is a shift in school culture that places a higher value on the 21st century skills students will need for future college and career readiness. In this section, I explain these benefits and other anticipated changes that will occur as a result of implementing this educative curriculum for key stakeholders, including teachers, students, school administration, and district leadership.

Teachers

In order to achieve the teacher objectives reviewed in Chapter 3, changes in teacher knowledge, skills, dispositions, and classroom environment are anticipated. First of all, teachers

must have personal skill with online research and comprehension. Karchmer (2008/2001) noted that teachers' perspectives on the use of the Internet in their classrooms are based on their views of, and experiences with, the Internet. Therefore, Ladbroke and Probert's (2011) finding that teachers lack Internet information literacy skills has significant implications. As a result of implementing this curriculum, teachers should improve their own skills in locating, evaluating, and synthesizing information from Internet sources. This is prominently featured in the teacher objectives. In addition, the included educative features will lead to changes in knowledge of usage of new technologies through the tips and teacher notes. These changes will, in turn, lead to changes in teachers' dispositions about technology use in the classroom. As discussed as a contributing factor to the problem in Chapter 1, many teachers feel intimidated by technology, lack self-efficacy to take risks, and therefore have negative attitudes and beliefs about technology integration efforts (Ertmer et al., 2012). Teachers with higher self-efficacy of Internet use tend to provide more frequent and more meaningful instruction integrating technology (Pan & Franklin, 2011; Wu & Wang, 2015). The teacher supports included in this curriculum will help to alleviate some of the fears and feelings of inadequacy related to technology by providing just in time support. This increased teacher self-efficacy will likely increase the frequency of meaningful learning experiences with online research that teachers provide students because teachers are willing to take a bit more risk and experiment with technology integration.

Other changes are expected to occur within the classroom learning environment during and after the implementation of this educative curriculum. As demonstrated in the literature and in the pilot study conducted during this DiP, collaboration is a necessary component in classrooms emphasizing digital literacies, such as online research and comprehension skills

(Coiro, 2011b; Leu et al., 2013; Leu et al., 2014). Consequently, one anticipated change is an emphasis on collaborative conversations and distributed learning practices among students and teachers. Another noted factor impacting the problem was a lack of classroom management strategies and classroom routines, and this must be established specifically for technology use in classrooms integrating technology into instruction (Hew & Brush, 2007; Van Allen, 2014). As such, another anticipated change is that teachers will devise classroom management plans revolving around the use of technology in their classroom. For example, to save time, students should be required to come to their guided reading group with their devices already logged in and connected to the Internet. Finally, another change may be in classroom arrangements. Van Allen (2014) found that one teacher discussed the need to rearrange the guided reading table into an inverted “V” shape, so he was able to sit in the middle to better observe the strategic actions of the students as they navigated through texts. These necessary changes in classroom procedures and the learning environment will likely take place as teachers begin to experiment with the implementation of this curriculum; and changes in teaching methods will likely occur as the teacher and students become more comfortable and skilled with online research and technology integration.

Students

As a result of participating in this curriculum, students will gain knowledge of essential skills they need for online research. Specifically, students will be able to analyze questions more effectively, determine initial search terms and revise those initial search terms based on their findings, evaluate web sources for bias, credibility, reliability, and validity, and synthesize information from multiple sources. Being able to critically evaluate information on the Internet

has proven to be one of the most difficult skills for students to apply in action (Leu et al., 2007; Leu et al., 2015; Kiili et al., 2008). This curriculum emphasizes the multifaceted components of this skill to ensure students are able to evaluate a web source from multiple perspectives.

Although online research and comprehension skills are not yet measured on state standardized assessments, these skills are necessary for students' success in college and careers, given the prominence and significance of the Internet in acquiring new information and knowledge today.

In addition, students' dispositions are expected to change as result of participating in this curriculum. Guided reading is a supportive context in which to build students' reading skills and dispositions. Given that this curriculum is set within a guided reading context, these supports remain when teaching online research and comprehension skills. Putman (2014) noted that students' dispositions towards online reading, including self-efficacy, motivation, and interest, affected students' use of online research and comprehension skills. O'Byrne and McVerry (2009) further found that reflection, persistence, and collaboration were essential dispositions for online reading. Through the teacher supports provided in this curriculum (*Teaching Tips*, *Background Knowledge*, and *Misconception Alert* boxes), students are expected to (a) become more reflective and metacognitive in their online strategy use, (b) demonstrate persistence in searching for answers, and (c) collaborate with others throughout the process to effectively and efficiently acquire information related to their topic. Additionally, findings from the pilot study support an anticipated increase in student enthusiasm, interest, and engagement when implementing these lessons.

School Level

At the school level, changes in organizational structure will occur as a result of implementing this curriculum. At CES, teachers must share a computer on wheels cart across the grade level in fourth- and fifth-grades, a common structure in many schools. Consequently, negotiations about how and when to allocate the computer on wheels cart or laptops within the cart to specific teachers will lead to changes in the allocation of these resources. Additionally, teaching with technology takes extra planning and instructional time as demonstrated in the pilot study and noted as a barrier to technology integration efforts in Chapter 1 (An & Reigeluth, 2011-2012; Hutchison & Reinking, 2011). Therefore, another anticipated change at the school level is school administration finding and negotiating time for additional instructional planning related to this curriculum during the school day.

Furthermore, changes are expected to occur in school level conversations and, subsequently, school culture. Recurring themes throughout this DiP indicated that students' lack of technology knowledge often resulted in reduced attempts at incorporating technology into instruction (see Tables 2 and 5). However, as students become more proficient with device basics and more experienced with skills necessary for online research, teachers are expected to increase their use of the Internet in instruction. For example, teachers in other curriculum areas, such as science, math, or music, will be more willing to allow students to investigate topics on the Internet because students are better prepared with the skills to conduct online research. In addition, the educative features of the curriculum components provide teachers with a common language and common experiences. As teachers use this common language to collaborate and troubleshoot problems with each other, more conversation surrounding technology integration

will be evident. Overall, these changes will contribute to a school culture that emphasizes technology-focused instruction to enhance student learning. These culture changes may also be noticed in teacher evaluations as teachers increase attention to the teacher evaluation elements that include technology integration.

School District Level

Although this curriculum will not have a direct impact at the school district level, the district holds the political power to allocate resources to schools (Bolman & Deal, 2013). Additional resources will need to be allocated to schools implementing this curriculum in a variety of ways. First of all, access to technology and technology support has been identified as a major factor impacting technology integration efforts and a contributing factor impacting this problem as discussed in Chapter 1 (Carver, 2016; Hew & Brush, 2007). In the pilot study, for example, a major theme the teacher noted as one of the biggest challenges was technology issues, which greatly altered how she implemented her lessons (see Table 5). As such, the need for wider access to a technology support representative at schools implementing this educative curriculum is an anticipated change because devices that are operating improperly will need to be fixed promptly in order for the curriculum to be most effective. Finally, the school district may also be required to provide additional funding for technology within schools or provide additional devices in order to offer adequate access to the materials needed to implement the curriculum.

Additionally, school districts are often responsible for investing in employees by providing training to expand employees' skills and knowledge (Bolman & Deal, 2013). Another anticipated change is a greater request for district support and PD related to online research and

comprehension skills as well as PD on instructional approaches relevant to technology integration due to inexperienced and undertrained staff at schools. In PCPS, PD on guided reading was a hot topic for literacy coaches and teachers. Findings discussed in Chapter 2 (see Table 6) reveal that traditional guided reading has many key differences from online guided reading. Themes from the pilot study show that the role of the teacher and students is greatly different within the reconceptualized online guided reading framework. Changes to these existing PDs on guided reading will need to occur in order to help literacy coaches and teachers understand these differences and become better prepared to enact online guided reading lessons. More in-depth trainings and learning experiences are anticipated to occur for literacy coaches as they grapple with the role changes inherent in the online guided reading framework.

Evaluation of the Educative Curriculum (Measures of Success)

In order to determine if the educative curriculum materials are meeting the intended goals during and after implementation, measures of student learning and classroom implementation indicators should be used. To date, the only summative standardized assessment of online research and comprehension skills that exists is the Online Research and Comprehension Assessment (ORCA) developed by Leu, Kulikowich, Sendrask, and Coiro (2014) for middle school students, which can be found at <http://www.orca.uconn.edu/professional-development/understanding/using-the-orcas/>. However, no assessment currently exists for elementary students even though numerous researchers have indicated that there is a great need for these types of assessments (Coiro, 2012; Eagleton & Dobler, 2015; Leu et al., 2013; Leu et al., 2015). In this section, I discuss the evaluation measures that may be used to indicate student growth and effective classroom implementation of the educative curriculum materials.

Student Growth Indicators

To measure student learning, this curriculum recommends conducting a performance-based inquiry project at the conclusion of the curriculum implementation to assess students' proficiency with these skills. Guidelines for designing the culminating inquiry task are provided in Chapter 3. Another useful tool I included within each of the strands of curriculum to help teachers track student mastery of specific skills as they implement the curriculum is a skills checklist which is exemplified in Figure 8. I designed these checklists using the lesson learning targets. As teachers implement lessons within the curriculum and observe mastery of specific strategic actions or online reading behaviors of each student, the teacher should document mastery by placing the date under the skill. Finally, another assessment that may be repeated periodically throughout the curriculum to document student growth over time is the individually administered 10-minute Online Web Strategies Assessment. To conduct this assessment, follow the following steps recommended by Eagleton and Dobler (2015):

1. Explain to student that you want to know how he or she usually finds information on the Web. Say that this activity will take 10 minutes.
2. Say to student "Let's say you were doing Internet research on the lory, which is a type of parrot people keep as pets. Show me how you would find information about how to feed and take care of a lory. Please talk through every step as you go so I can understand what you're thinking." [Spell "lory" for student.]
3. Record or write down everything the student does. If students forget to talk out loud, prompt them frequently; for example, "What are you doing now?" "Why did you choose that link?" "What is going through your head right now?"

4. End the test at 10 minutes. Ask what the student would do next if there were more time. (p. 74)

This assessment may be modified to prompt students to search for different topics or to be conducted within 5 minutes. Overall, these assessments may be used in tandem with the curriculum to evaluate student learning.

Web-Searching Basics Checklist										
List the date that each student demonstrates mastery of the skill.										
Student Name	Opens a web browser and navigates to a search engine.	Opens a web browser and navigates to a specific web address.	Uses the search toolbar to conduct a search on a given topic.	Uses the back icon appropriately.	Uses the forward icon appropriately.	Uses the refresh icon appropriately.	Responds appropriately to an error without assistance.	Opens new tabs in a web browser.	Toggles between tabs in a web browser.	Toggles between different windows or applications.

Figure 8. Web-searching Basic Skills Checklist

Classroom Implementation Indicators

In addition to student growth indicators, administrators and instructional coaches may observe several classroom indicators of effective implementation of these educative curriculum materials during discussions with the teacher, classroom observations, and/or classroom walkthroughs. Successful technology integration efforts must include clear classroom management plans for using the technology, think alouds to model the thinking and skills used by expert users, and much discussion and collaboration among teachers and students (Hew & Brush, 2007; Coiro, 2011b; Leu et al., 2008; Van Allen, 2014). Based on these successful

components of technology integration efforts, the following elements may be used as evidence of successful implementation of the lessons within this curriculum:

- Clear routines and procedures have been established for preparing and bringing devices to the online guided reading group.
- Clear guidelines for using the devices within the group have been established and are enforced.
- The teacher can explain the specific strengths and needs of each online guided reading group.
- The teacher uses think alouds to introduce and model strategic reading actions of online readers.
- Frequent student discussion is evident, with students regularly leading the discussion and sharing their strategies and thinking with each other.
- The teacher monitors for strategy use and prompts students to implement strategic online reading actions when needed.
- The teacher leads students in reflecting on their use of strategies at the end of each lesson.

Considerations for Implementation

Several considerations must be taken into account to guarantee effectiveness before implementation of this curriculum occurs. First of all, I did not design this curriculum to educate teachers about the components of the guided reading framework. Consequently, teachers implementing this curriculum should already fully understand and be able to successfully implement each of the components of Fountas and Pinnell's (2012) guided reading framework. I

recommend that schools implementing this curriculum ensure they have already established and regularly use guided reading as an instructional context for their small reading groups prior to introducing this curriculum to teachers.

Second, I recommend providing teachers with PD before, during, and after the implementation of this curriculum. Although the curriculum provides supports to help develop teachers' understanding of online research and comprehension skills and accompanying instructional approaches, PD opportunities will allow teachers to engage in collaborative discussions with others and ask questions that an unresponsive curriculum cannot answer. This will support deeper learning and further experimentation with the skills and instructional approaches addressed in the educative curriculum. Some topics that may need to be addressed are:

- The changing nature of literacy today and the importance of online reading and comprehension skills
- Components of the online guided reading framework (see Chapter 2)
- Online research and comprehension skills (Leu et al., 2013)
- How to prompt and support students' strategic actions during online guided reading – online guided reading prompts (see Chapter 3)
- How to use the If-Then charts provided in the curriculum to design an instructional learning path based on student needs (see Chapter 3)
- How to establish instructional routines and procedures with technology
- The inquiry process (see Chapter 3)
- Using an Internet Reciprocal Teaching approach (Castek, 2013; Leu et al., 2008)

- Using think alouds in instruction (Coiro, 2011b)
- Basic troubleshooting of technology problems (see Chapter 2)

The PD provided should focus on the needs of the teachers within the school. Accordingly, a needs assessment should be conducted prior to developing and implementing PD experiences for teachers. Kaufman, Rojas, and Mayer (1993) stated that a “needs assessment is a process that we use to identify gaps between current results and desired ones, place the gaps in results (needs in priority order), and select the most important ones to be addressed” (p. 3).

Third, as identified in the discussion of barriers to technology integration in Chapter 1, many teachers are afraid to take risks with technology integration (for various reasons such as lack of experiences with technology, curricular demands, teacher evaluation systems, etc.). They often do not feel supported by school administration to persist through the trial and error that occurs when integrating technology into instruction for the first time (Hew & Brush, 2007). In order to prepare all students for learning (and working) in the 21st century, creating and supporting a culture of risk-taking with technology integration efforts is imperative. According to Bolman and Deal (2013), “Culture forms the superglue that bonds an organization, unites people, and helps an entire enterprise to accomplish desired ends” (p. 248). Building a culture that empowers employees by encouraging autonomy, participation, creativity, exploration, and collaboration is essential for fostering 21st century skills, such as online research and comprehension, in today’s classrooms.

Plan for Modifications

Considering that the curriculum materials developed for this DiP do not represent the full breadth of the final educative curriculum, lessons learned from the design of the current lessons

and results from the expert panel review will guide the modification of current lessons and development of future lessons. Based on the technology issues faced in the pilot study and recommendations of the expert panel review, it is clear that more troubleshooting tips need to be included in the curriculum. Though some technology tips may fit within each of the specific lessons, other tips will apply across the curriculum. Accordingly, I plan to include two separate components into future lessons and the final curriculum. Troubleshooting tip popout boxes will provide teachers with information on how to solve basic technology issues that may occur during specific lessons. I will also include an appendix to the curriculum with general guidelines for troubleshooting basic problems, which will be titled Troubleshooting 101. Another educative feature that I will include within the curriculum are narratives of classroom practice for individual lessons. These narratives will provide a model of the instructional decisions teachers make as they implement the lessons and show teachers how to differentiate the lessons for specific needs (Davis et al., 2014). As a part of these narratives, screenshots and screen captures may be integrated to model specific steps of the lessons, providing a clearer picture of lesson implementation. Lastly, because classroom routines, procedures, and expectations are an important component of any classroom integrating technology into classroom instruction, an appendix that provides support in recommending specific routines, procedures, and classroom technology usage expectations for the curriculum and offers guidelines for establishing them in the classroom is necessary.

Furthermore, the expert panel review members recommended a couple of design considerations to improve ease of use and navigation through the curriculum materials. When modifying the design of the lesson layout, I will need to consider how to call more attention to

the popout boxes that hold many of the educative features within each of the lessons. Also, I intend to hyperlink each of the lessons within the curriculum, the If-Then charts, and include a hyperlinked table of contents to make navigation easier.

Methodological Limitations

Certain limitations apply to the design of the pilot study and inclusion of the expert panel review. I discuss each of the limitations related to specific elements of this DiP in this section. One limitation that should be acknowledged throughout the study was my role as a researcher. Herr and Anderson (2015) note the importance of positioning yourself within the context of the research because this position will affect decisions that you make and carry certain limitations. Throughout the study, I remained the literacy coach at CES. My position as a researcher and curriculum developer collaborating with other insiders within CES carries with it the potential for bias and/or potential power relations that could affect the results of the study. On the other hand, the collaborative relationship I formed with participants throughout the study and insider background knowledge of the organization also provided me with a unique perspective and better understanding of the results (Herr & Anderson, 2015).

Pilot Study

The pilot study conducted as part of this DiP followed a case study design. Case studies allow for limited generalizability because of the limited sample size and bounded system to which the study is connected (Creswell, 2013). Given that this study was conducted to inform the solution to the complex problem of practice at CES, I selected teachers from CES, a convenience sample, to participate in the study. CES is a moderately sized Title 1 school serving

a diverse population of students in a large, urban school district. Teachers at CES must consider the needs of these students when planning instructional activities, and this may be vastly different from the needs of students in different populations. In addition, I initially intended to select two teachers for inclusion in the study, one technologically proficient teacher and one technologically nonproficient teacher. However, only one technologically proficient teacher was willing to participate. This limited number of participants was not representative of all teachers within the school. Finally, the pilot study lasted for ten days. During this time, the teacher was able to teach students about half of the skills related to online research and comprehension skills, limiting the potential of the pilot study to inform the curriculum's development on lessons involving the skills that were not taught during the pilot study.

Expert Panel Review

In addition, the size, selection, and composition of the expert panel provided additional methodological limitations. Although a range of participants, including researchers, district administrative personnel, district instructional coaches, school instructional coaches, and teachers were invited to participate, a limited sample consisting of one teacher and one district instructional coach returned the final review materials. Though these two reviews provided valuable information and recommendations for the curriculum development, they were limited because they did not represent a complete view of stakeholders with varying expertise to inform the curriculum.

Anticipated Impact

The purpose of this educative curriculum was to introduce online research and comprehension skills to students in the upper elementary grades within the supportive context of the guided reading framework while also providing educative supports to teachers as they understood and implemented instructional approaches related to these skills. I expect the impact of this curriculum to be most visible in teachers' instruction and student learning.

“Reading on the Internet is often a process of inquiry that involves students researching problems and issues” (Cho & Afflerbach, 2015, p. 513). As teachers work through this curriculum and students become more proficient with online research and comprehension skills, a shift in teachers' instructional approaches towards more inquiry-based learning experiences in the form of projects or problem-based learning projects may become more prevalent. In these cases, students will have more time to explore and experiment with the Internet while engaged in meaningful learning activities.

Given that online research and online reading comprehension continues to rely on traditional reading strategies and then builds on these strategies in complex ways, this curriculum is expected to have a positive impact on student achievement on state standardized reading assessments (Afflerbach & Cho, 2010). New educational standards require students to identify important information from textual sources, closely examine and evaluate the information provided to identify well-constructed and well-supported claims, synthesize information across multiple sources, and self-monitor their reading strategies (NGA & CCSSO, 2010). These same strategies are required of online readers, but must be utilized and expanded upon to navigate a nonlinear, complex reading environment. Therefore, students will be required to apply

traditional reading strategies as well as new skills and strategies required by online research throughout the curriculum. An anticipated benefit of such knowledge and skills is improved student achievement on current state standardized reading assessments.

CHAPTER 5 IMPLICATIONS AND RECOMMENDATIONS

Introduction

Throughout this dissertation in practice (DiP), I have described the design decisions I made that were informed by a pilot study as I developed an educative curriculum for fourth-and fifth-grade students and teachers that introduced online research and comprehension skills within a reconceptualized guided reading framework. In addition, I discussed the goals, anticipated changes in knowledge, skills, and dispositions, indicators of success, considerations for curriculum implementation, and overall anticipated impact. Overall, I designed this educative curriculum to propose a solution to a complex problem of practice at CES where efforts to incorporate scaffolded practice in online research and comprehension skills were nonexistent. However, I found research to suggest that this problem was more widespread than CES, which led me to design the educative curriculum for a broader user population of fourth- and fifth-grade teachers (Coiro & Dobler, 2007; Greenhow et al., 2009; Leu et al., 2015). Furthermore, I found little evidence of research to inform instruction in online research and comprehension skills or technology usage within a guided reading context (Delacruz, 2014; Salyer, 2015). In this chapter, I use findings from this DiP to discuss implications and recommendations for further curriculum development and research.

Implications of the Educative Curriculum

Research in online research and comprehension skills and digital literacies, overall, is still in its infancy. Some researchers have suggested that rapidly changing technologies will require different forms of research paradigms and practices than those used in the past (Leu et al., 2013).

This is also true of instructional practices in K-12 schools and teacher preparation programs and has implications for many varied stakeholders. Nevertheless, this study provides far-reaching implications for inservice teachers, preservice teachers, curriculum developers, and policy-makers.

Inservice Teachers

As a result of my own positionality as a literacy coach and the data I collected in this DiP, I have found that inservice teachers enact curriculum materials in ways that are consistent with their goals, beliefs about students and learning, existing knowledge of subject matter, and existing knowledge about instruction (Brown, 2009). Educative curriculum materials are one method of changing teachers' existing beliefs and knowledge as they make important instructional decisions (Davis & Krajcik, 2005). At the same time, studies show that teachers' use of educative supports found in educative curriculum materials vary greatly (Bismack et al., 2014; Drake et al., 2014). Without proper training and support in using these materials productively, educative curriculum materials may not have maximum effect on student learning. Inservice teachers, especially novice teachers, need to be provided with professional learning experiences that guide them through identifying and using important features of curriculum materials and educative curriculum materials. In addition, inservice teachers should be engaged in ongoing professional learning experiences surrounding technology integration and online research and comprehension skills. Although this curriculum provides teachers with support, it is a static curriculum that cannot fully meet the needs or reach the depth of professional learning that a teacher needs to succeed in this endeavor.

Other implications for inservice teachers relate to classroom practices. The teacher in the pilot study noted that a significant challenge was that students were often distracted by the technology, a finding that was also corroborated in the literature (Fabos, 2008; Hew & Brush, 2007; Van Allen, 2014). Teachers must find classroom time to allow students to play and experiment with these technological devices outside of direct instruction. Not only will this additional “play” time help to familiarize and build students’ skills with the devices, it will also help teachers establish specific times for work on the devices such as during the guided reading group time, versus time for other exploration.

Furthermore, inservice teachers must find time to embed instruction in foundational technology skills into everyday learning. For example, teachers may embed typing practice in literacy centers by having students work on a typing program. Additionally, teachers may engage students in an after-school computer club that emphasizes basic computing skills and guides students as they work in common programs, such as Microsoft Office. Finally, teachers may consider teaching different groups of students how to navigate different programs or handle specific situations with technology to make them the classroom experts on the topic. Then when issues arise or other students need help with one of these aspects of technology, students can be directed to the classroom expert. Creative shifts in classroom practices will allow teachers to address foundational technology skills while dedicating more time to building complex knowledge, skills, and dispositions surrounding technology essential in the 21st century.

Preservice Teachers

There are also implications from this study for work with preservice teachers. Given the importance of 21st century skills, such as online research and comprehension skills, teacher

preparation courses should model ways to incorporate technology into instruction in authentic ways throughout their preparation coursework and in dedicated classes on digital literacies. By providing a model in these courses, preservice teachers will consider when and how to use certain technologies in instruction and also have memorable experiences from which to draw. In addition to including technology into teacher preparation courses, specific courses should be developed on digital literacies. Digital literacy courses will provide preservice teachers with foundational knowledge of and experience with the skills and dispositions necessary for flexible technology usage in an ever-changing landscape. In addition, these courses should prepare teachers with knowledge of effective instructional approaches and learning activities that incorporate technology in meaningful and authentic ways within their area of specialization.

Curriculum Developers

Many curriculum materials provide teachers with ideas for integrating technology into lessons. These ideas, however, often provide superficial or inauthentic uses of technology. Curriculum developers need to consider and incorporate technology in meaningful ways that deepen and enhance learning within the specific discipline addressed through the curriculum. When developing these activities or lessons with technology, the TPACK model provides a useful lens for guiding curriculum developers in considering the ways content and pedagogy interrelate to the technologies being proposed for use (Mishra & Koehler, 2006). For example, in the sciences, there are many tools that can be used to virtually visualize and model science concepts. In geography lessons, Google Earth can be used to take students on virtual field trips to the places they are studying. Furthermore, inquiry projects integrate multiple subject areas as students explore a topic in depth, relying on technology tools to find information, synthesize

information, and communicate their findings to others (Eagleton & Dobler, 2015). Nonetheless, curriculum developers should guide teachers in incorporating technology into their teaching practices in routine and transparent ways through the suggestions they provide in curriculum materials.

Policymakers

Leu et al. (2015) recommended that assessments of new educational standards incorporate assessment of online research and comprehension skills. The CCSS indirectly addressed online research and comprehension skills as well as other digital literacy skills, leading to inconsistent implementation of digital literacies in classrooms across the nation (Leu et al., 2014). Policymakers can help to alleviate this problem by ensuring that state standards and state educational assessments explicitly incorporate language emphasizing digital literacy skills. In addition, other policy efforts may focus on technology integration efforts within schools and districts. Schools have a responsibility to provide students with foundational technology skills starting in the elementary grades. Policymakers can ensure that schools are provided the instructional time and resources necessary to provide appropriate instruction in these foundational technology skills. One-to-one device initiatives require extensive funding to purchase the devices and ensure schools have the appropriate infrastructure to support these devices. Also, increased technology use leads to greater technology support needs, including PD opportunities for users, but it requires additional funding. Increasing funding for technology initiatives within schools and districts will have a positive impact on these initiatives.

Recommendations for Future Curriculum Development and Research

Given the positive feedback provided by the expert panel review members, this educative curriculum should continue to be developed and refined using the plan for modification identified in Chapter 4. As recommended by the expert panel review, troubleshooting tips should be incorporated into the curriculum. Once completed, the educative curriculum should be reviewed by an expanded panel of experts to examine the base curriculum content for relevance and accuracy and to suggest improvements. In addition, the educative curriculum should be implemented in a pilot study with teachers in a variety of school contexts to determine effectiveness in reaching the student and teacher objectives. Furthermore, the educative curriculum materials proposed in this DiP should be studied by researchers to determine their impact on student knowledge, student performance, teacher knowledge, and classroom instruction. In addition, after testing the curriculum with other teachers and students in lower elementary (Grades two and three) and/or middle schools grades (Grades six through eight), curriculum developers may use the results to modify the curriculum for use with students and teachers in these grades. Although these recommendations directly relate to the educative curriculum materials designed in this DiP, broader recommendations apply beyond the educative curriculum materials as well.

My research throughout this study led to minimal research findings on guided reading and digital literacies. How does a guided reading context impact student learning of digital literacy skills? Research needs to be conducted on the impact of the reconceptualized framework for guided reading, termed online guided reading in this DiP, and inclusion of other digital literacies taught through a guided reading context on student knowledge. Additionally,

formative and summative assessments of online research and comprehension skills are greatly needed if work in this area is to continue. How can teachers assess and monitor students' strategic use of online research and comprehension skills to inform instruction? Researchers should work on developing and validating the use of specific instruments to measure these skills in addition to other digital literacy skills in upper elementary grades. Since schools have a great responsibility for teaching foundational technology skills in the 21st century, researchers should also focus on determining the most effective practices in the elementary grades. What are the most effective ways to embed foundational technology skills into existing school structures? What resources are most effective for teaching these foundational skills? Furthermore, school culture has a great influence on teaching practices within a school (Bolman & Deal, 2013). What impact does a school's culture have on the implementation of the reconceptualized guided reading framework proposed in this DiP or on digital literacies overall? The impact of different school cultures, such as a culture of risk taking, emphasis on inquiry, or focus on student and teacher collaboration, should be examined to determine their effect on technology integration practices. Finally, it is clear that teachers need support in transforming their teaching practices to include meaningful and authentic incorporation of technology. Future researchers may inquire into and explore the types of supports that are most supportive to teachers as they transform their teaching with technology.

Impact of the Ed.D. Program

My coursework in the Doctor of Education (Ed.D.) program provided me with foundational knowledge to fully investigate this complex problem of practice from multiple lenses. In particular, the Facilitating Learning Development and Motivation and Organizational

Theory in Education courses helped me develop a firm understanding of different lenses related to learning, motivation, and organizations and then helped me apply the lenses to the problem I addressed in this DiP. Another course that had a major impact on my understanding of this problem was Literacy for 21st Century Learners. This course provided me with a strong foundation of the multiple perspectives and demands new technologies bring to literacy and literacy instruction in the 21st century, as well as implications of these New Literacies on literacy instruction, assessment, and research for a wide group of stakeholders (inservice teachers, preservice teachers, teacher educators, school and district leaders, researchers, policymakers, etc.).

Overall, my experiences in all courses in the Ed.D. program prepared me with many skills I have relied upon to complete this DiP and will continue to use as I move forward as a literacy educator and researcher. First of all, I became more adept at scholarly reading and writing. I learned how to critically analyze and evaluate journal articles and other professional texts to determine their validity and reliability in relation to my purpose and to understand new ideas that varied from my own understandings. Most importantly, collaboration with others was repeatedly emphasized throughout the program. During the course of this DiP, I used the collaboration skills I had refined during the Ed.D. coursework to collaborate with the case study teacher and expert panel review members. Additionally, I continuously collaborated with numerous colleagues to discuss ideas and more clearly articulate my thoughts as I wrote this DiP. The coursework I completed through the Ed.D. program, along with scholarly discussions with my peers and professors, prepared me with the foundation I needed to complete this DiP, which provides an educative curriculum as a solution to a complex problem of practice.

Conclusion

The educative curriculum materials I proposed in this DiP were designed to build upper elementary students' foundational knowledge of key dispositions and skills necessary for online research and comprehension and develop teachers' content, pedagogical, and technological knowledge of online research and comprehension skills. Additionally, the educative curriculum materials led to the development of a reconceptualized version of the guided reading framework for incorporating instruction in online research and comprehension skills into instruction. It is clear that new and ever evolving technologies will continue to shift the way we access information and communicate with others. Consequently, as educators, we must prepare our students with the skills they need to effectively locate and understand the information they find and then critically analyze, evaluate, and synthesize information from multiple sources to make sense of all of the information. Instruction in these skills must begin early in students' educational careers so they are prepared to practice and refine these skills in the more discipline-specific classes they take during the secondary school years. This complex problem of practice addressed in this DiP is not calling for add-on solutions; rather, it is calling for redesigned and reimaged solutions. As a result, educators must find ways to reconceptualize their instructional approaches to better meet the shifting roles of students and teachers inherent in technology integration efforts. In conclusion, these educative curriculum materials are one method of providing teachers with support in teaching students the skills they need for future success in an online world.

APPENDIX A
IRB MATERIALS



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Exempt Human Research

**From: UCF Institutional Review Board #1
FWA00000351, IRB00001138**

To: Jennifer Van Allen

Date: October 05, 2015

Dear Researcher:

On 10/05/2015, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review:	Exempt Determination
Project Title:	Internet Reading and Learning Within a Guided Reading Context
Investigator:	Jennifer Van Allen
IRB Number:	SBE-15-11638
Funding Agency:	
Grant Title:	
Research ID:	NA

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the [Investigator Manual](#)

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

A handwritten signature in black ink that reads "Joanne Muratori".

Signature applied by Joanne Muratori on 10/05/2015 04:01:05 PM EDT

IRB Manager



Orange County Public Schools

445 West Amelia Street • Orlando, FL 32801-1129 • Phone 407.317.3200 • www.ocps.net

s-Coe

University of Central Florida

APPENDIX B
PILOT STUDY MATERIALS

Pilot Study Blueprint

Main Research Question: How does a teacher integrate digital tools during guided reading lessons to support upper elementary students' development of online research and comprehension skills?

Research Sub-questions	Data	Instrument	Analysis
How does the role of the teacher and students change with the introduction of online texts during a guided reading lesson in a 4 th grade classroom?	Teacher self-reports of daily learning targets and daily lesson sequence; Teacher reflection on lessons and student learning, student responsibility	Reflection log; Interviews 2 & 3	Thematic Analysis
What components of guided reading best support students' online research and comprehension skills?	Teacher descriptions of successes; Teacher self-reports on teaching approaches used	Reflection log; Interviews 2 & 3	Thematic Analysis
What challenges do the teacher and students face with the integration of online research and comprehension within the guided reading framework?	Teacher descriptions of challenges; Teacher comfort and proficiency levels with technology	Reflection log; Interview 1-3	Thematic Analysis Compare reported challenges to proficiency, comfort, and knowledge levels

Daily Reflection Log

<u>Date:</u>	
<u>Daily Learning Target</u> (What is your student objective for the day?)	
<u>Rationale for Target</u> (Why did you choose to teach this today?)	
<u>Approach</u> (Briefly describe how you taught it to the group or copy your lesson sequence here. Identify what aspect of guided reading you used most often today.)	
<u>Successes</u> (What went well during the lesson? What did students catch onto quickly? Describe any AHA moments? To what do you attribute the successes?)	
<u>Challenges</u> (What challenges did you face? Technical difficulties? Student misconceptions or misunderstandings? To what do you attribute the challenges?)	

Interview Protocols

Interview 1

Purpose: The purpose of the first interview is to gather relevant background information about the teacher's prior experiences, level of proficiency and comfort with technology, and knowledge of online research and comprehension skills.		
Data	Question	Prompt
Demographic information	Please tell me about your educational background, prior work experiences that dealt with technology, and teaching experiences.	Probe for job title, specialization, and previous experiences, especially those related to technology
Proficiency with technology	How would you rate your proficiency with technology? Why would you consider yourself (above average, average, below average)?	Provide ratings as needed: above average, average, below average
Perspectives of technology integration in the classroom	What are your beliefs about 21 st century literacies? In your perspective, what is the role of technology in student learning? What role does technology play in your teaching practices?	Probe for feelings and attitudes about technology integration.
Comfort with using technology (Self-efficacy)	How do you usually use technology/digital devices in your personal life? At work? How would you rate your comfort level with using technology? In the classroom? How often do you have students use technology in your classroom? For what purposes?	Probe for specific activities or uses of technology. Do you go online often? How often do you use the Internet for finding answers to problems or researching something? How often do your students go online? How often do you guide your students to use the Internet for finding answers to problems or researching something? Provide ratings as needed: very comfortable, comfortable, uncomfortable, very uncomfortable.

Knowledge of online research skills	What skills do you think are important for online research? What strategies do you think students need to conduct Internet research?	What skills do you think (4 th or 5 th) students should possess in this area? How proficient are your current students in these areas?
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Interviews 2 and 3

Purpose: The purpose of the weekly interviews is to examine the implementation of in further details and clarify or probe further into the teacher's daily reflection log.		
Data	Question	Prompt
Teacher perspective of lessons	How did your lessons go this week?	Tell me more about . . . Probe for specific thoughts, reflections, and reactions to the lessons.
Teaching and learning successes	What do you think went really well this week? What do you think students learned? How do you know?	Probe for specific activities and skills. Probe for specific descriptions and evidence of student learning.
Teaching and learning challenges	What was most challenging this week? What do you think caused those challenges?	Probe for specific descriptions of challenges. What happened to make that a challenge? Was a teaching challenge? Learning challenge for students? Where do you think it went awry? What would you change next time you teach that skill? Why?
Role of the teacher and role of the students	What was your role in instruction this week? What role did you students play?	Who did the most work? How do you know? What did you do to engage students? What was the students' level of engagement?

Reflection Log Responses

Date	Daily Learning Target	Rationale for Target	Approach	Successes	Challenges
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11/2/2015	Students will be able to use the computer and its basic functions	I wanted to make sure the students could work the computers before we got into the more challenging things.	I lead the students through the first part of the checklist to see what they could do on their own and then showed them how to do some basic things with the computer.	The students were able to do much more than I expected. They just learned as they played.	2 computers were either dead or didn't work.
11/3/2015	Students will be able to describe basic web searching.	I wanted to make sure the students could work the computers before we got into the more challenging things.	I continued to lead the students through the first part of the checklist.	Students did really well with opening new tabs and windows.	We are 2 computers down, and the students struggled with the difference between a search bar and the address bar.
11/4/2015	Students will be able to use strategies to understand the question.	Making sure that the students understand what the question is asking them, will help them to find keywords and search better.	I guided the students through the question and had them type it out. I then asked them what the question was asking them? How many parts are there to the question and what are the different parts?	Students were able to identify the first part of the questions with ease and with a bit more guidance they got the second part.	Another computer bit the dust, the students also struggle with typing. They hunt and peck.
11/5/2015	Students will be able to create key words or phrases in order to search.	I was making sure that the students completely understood what the question was asking of them. If they were able to tell me what they were searching for then they had a complete understanding	I simply asked the students what they should search for. What things would they type in to the search box in order to get an answer to their question.	Students were able to quickly come up with the keywords that they needed to look for.	A couple students were unable to come up with keywords and or did not want to verbally participate.
11/6/2015	Students will be able to read	I wanted to make sure that the students looked at the	Once the students typed in their keywords I had them	I was surprised that the students didn't want to	I had students going through the motions but

	and understand search engine results	results before clicking on the first one.	stop and look at the results. I asked them which link was the best one and why. I then talked to them about the difference between .org, .com, .edu, .gov.	click on the first link. Most of them wanted to go straight to Wiki because they knew that was a good site.	and doing everything we were doing but it was difficulty to get anything out of them verbally.
11/9/2015	Students will be able to understand the structure of a website	I wanted to make sure they understood the difference between a website and a book or article.	Most students wanted to go to wiki, so we when they clicked on the website I had them scroll down and look at what the page has on it.	Students were able to understand that it had text features and that the text features helped them with the actual text.	getting students to stay on task and not just click on they hyperlinks to go exploring.
11/11/2015	Students will be able to read information within a webpage	I wanted to make sure that they were able to read the site and to look at the different text features that were there to help them understand what they were reading.	I had the students start with the first part of the question, "who has controlled Florida". When they went to the Wiki site they started reading and pulled out some countries. I then had them look at the text feature that was at the left hand side and asked them how that would/could help them.	One student read that the Spanish controlled Florida and thought that meant Puerto Rico (that's where she is from) but when she read the text feature they used the word Spain and she made the connection between the two.	Computer died on us during the lesson. Still struggling with student to become more talkative.
11/16/2015	Students will be able to read information within a webpage	I wanted to make sure that they were able to read the site and to look at the different text features that were there to help them understand what they were reading.	I had the students start with the first part of the question, "who has controlled Florida". When they went to the Wiki site they started reading and pulled out some countries. I then had them look at the	Students were able to come up with other questions when they didn't understand what they read. They would then open a new tab and search for that	Students were picking out countries and writing them down as one who controlled Florida, when they had nothing to do with the control of Florida. They were not reading

			text feature that was at the left hand side and asked them how that would/could help them.	answer before continuing.	to understand they were just pulling out the bold countries.
11/17/2015	Students will be able to read information across multiple pages of a website	I wanted to make sure students understood how to use a hyperlink and how to get back to where they were originally. I also wanted to make sure they knew what a hyperlink was and how it could help them and how it may distract them.	As the students were reading the Wiki page they came across words that were in blue. I asked them why they thought that the words were a different color. I then explained to them what a hyperlink was and had them click on it to see what happened.	One student was very savvy and was able to tell me why the hyperlinks were there and how to use them. Very impressive.	Students got confused and sidetracked with what they were actually looking for. I had to redirect and refocus.
11/18/2015	Students will be able to read information across multiple pages of a website	I wanted to make sure that the students who struggled with the getting off task yesterday understood how to stay focused and use the hyperlink to their advantage.	I used this same approach, but focused on the few students that needed the extra help.	One more student caught on	Still working with a student
11/19/2015	Students will be able to read information across multiple pages of a website	Students are slowly reading and gathering information, I want to make sure they have enough to move to the next part.	I am allowing the students to do the majority of the talking within the group. They are for the most part all on the same page.	Students are very engaged and are learning a lot about Florida as they find the answer to the main question.	It takes the students a long time to read and take notes and then search for what they didn't understand. They are still working on the first part of the question.

Interview Transcripts

Interview #1

I: Tell me about your educational background, prior work experiences that dealt with technology, and your teaching experiences.

P: Ok, so educational background with technology?

I: Educational background first

P: College graduate, Bachelor in Child Development. I got my professional certificate the alternative way.

I: How about prior work experiences that dealt with technology?

P: Well, I was a server, so we had the system that changed frequently with upgrading, so just learning that and how to enter in credit cards and run tickets and all of that kind of stuff. I also worked at an after school program, so using the computers with the kids.

I: What kind of experiences did you have in that program? What did the kids do on the computer?

P: The kids did...we would pull them in with different age groups, so depending on what day would be what age group I would pull into the computer lab. They would use whatever online curriculum they had. So we have iReady. I think that they used Successmaker back then because this was several years ago. And then something else. I can't remember what it was. The kids knew how to use it because they had done it in school, which was kind of that extension.

I: Did they ever go online?

P: No, it was always with a program.

I: How about your prior teaching experiences?

P: I subbed before I became a teacher. I got to experiences using Promethean boards when they first came out in a new school. So this brand new school was built and they had the Promethean boards and all Mac computers, so that was my first experience with Mac in a school. That was nice!

I: How many years of experience did you get to work with those?

P: One year. I substituted for a year before I moved back down here.

I: How many years have you been a teacher total?

P: Including substituting?

I: Teaching as a classroom teacher.

P: This is my seventh year.

I: How many years of subbing?

P: Two years.

I: How would you rate your proficiency with technology?

P: On a scale of one to ten?

I: Average, above average, or below average?

P: I'd say I'm probably above average, but not. . . I don't know everything. I learn very quickly.

I: Why would you consider yourself above average?

P: Being raised, my dad was always with technology, so we've always had technology in our house and then the schools we've been to have always had, growing up, the best technology, the newest. With my husband, he is very technology oriented as well, so I kind of can't . . . I have to know what's going on with everything. And if I can do it one time as you are teaching, just one time, I can do it again.

I: So you would consider yourself a quick learner with technology.

P: Yes!

I: What types of things do you do with technology at home, in your personal life, or here at school?

P: Here at school, the SMART board is definitely something I use all of the time, creating SMART notebooks, using the computer programs we have here like AR and iReady, all of those. Last year I had the enrichment group and I taught them how to create Powerpoints, insert images and sounds. Then at home, getting online to research and create templates and data sheets and all of that kind of stuff.

I: What are your beliefs about 21st century literacies?

P: Oh gosh, I don't know! (pause) What does that mean?

I: 21st century literacies are the skills that our students will need when they graduate like skills with technology, being able to communicate through that, collaborate with others.

P: I think they need the integration of technology because that's where we're going. I mean everything is technology bound. I still think that they need to know the basic skills and then using the technology to enhance their learning.

I: Can you talk more about that?

P: Especially for reading, I think students need to know how to read and understand and decode and all of those phonics and phonemic awareness skills. They need to know those basic foundational skills. Then using the technology to enhance it. So iReady practices with them. It finds out where they are weakest at and really hones in on that skill, so they need to have that basic knowledge of how to do things and then taking that technology and using it to take them one step further.

I: What is the role of technology in student learning in your view?

P: In the past it hasn't been a major role, but I think as we get into more technology that's coming out, I think it's becoming more and more necessary for the students. I think the students are becoming less intrinsically motivated and more extrinsically motivated. And more adept at using the latest technology, being able to get on the computers, they like that. That's a reward for them.

I: So, you would agree that the technology is more motivating?

P: Yes.

I: What role does technology play in your teaching practices?

P: It plays a large role. I create my SMART notebooks on our SMART board. I use the projector. The kids are on the computers using the computer programs three to four times a week in their center rotations. I've just started using ZipGrade to help me grade multiple choice tests easier, which is an app on the phone. I use it and I try to use it every day.

I: How you use technology or digital devices in your personal life?

P: I have my cell phone with me 24, 7. It's my main link of communication to my friends and family. I have my computer. It's where I create things, where I keep images, and just do stuff on it.

I: (joking) What would do without it?

P: I don't know! I'd have to make photo albums again instead of creating them on an app or the web and then sending them to the print shop to get printed. I'd have to print them myself!

I: You've already spoken to this a bit, but how do you use technology at work? I know you said you use the ZipGrade program. You use SMART lessons. What are some other ways maybe that you use technology at work?

P: I haven't used it so much this year, but last year when I taught all subjects, in math, I had a teacher iPad. I was able to download some math programs on there for reteaching and practice of the basics, like multiplication skills, fraction skills. As the kids entered the classroom, they would have to answer a multiplication question. If they got it wrong, they went to the back of the line.

I: That's to support your work with students, how about to support your own work?

P: I use Progressbook to insert data. I use Excel a lot for item analysis. They have all the functions on there so I don't have to do the math myself! I can't think of anything else.

I: How would you rate your comfort level with using technology?

P: Pretty comfortable with it.

I: How about using it with students in the classroom?

P: By myself I'm very comfortable. With students, I'm fairly comfortable just because of the access that they could potentially have to certain sites makes me a little wary of just letting them get on and research things even though I know that OCPS has the filters. They always find ways around them.

I: How often do you have students use technology in your classroom?

P: During center rotations, they probably hit the computers three to four times a week. Then every day we are using the SMART board. They get up and use it for writing. I allow them to use it.

I: For what purposes?

P: To show their work. So if we've got the SMART board on, I'll have a graphic organizer up that we've been working on and they'll come up and fill it in. That allows me to see what they know, what they've written on their paper, if they understand what we are doing, and how to fill it in.

I: During centers rotation, for what purposes do you have students use the computer?

P: They are using the computer for iReady to work on the skills they need the extra practice in. They are also taking AR tests. They also take STAR every nine weeks.

I: So mostly for programs.

P: Yep.

I: Are there any other ways that you sometimes have them go on?

P: This year I haven't, but last year I used it in the enrichment group. They went on and did Powerpoints and projects. I also had my last year group write out some of their essays, type out, not write out, some of the essays they had completed.

I: How did you facilitate the Powerpoints and the projects?

P: Because it was the enrichment group, most of them had some knowledge of Powerpoint and when it came to they wanted to add something, they would always ask and I would show them. I would have them do it because that is how I learn. They would do it and I would explain it and then they seemed to be able to figure it out. They felt more comfortable in trying things.

I: Let's go back to your personal use of technology. Do you go online often?

P: Yes.

I: How often do you use the Internet for finding answers or solving problems?

P: Just this morning, for half an hour I was online searching, trying to find stuff. Trying to find the answer to their weekly test and getting that all done. I'm on it all the time.

I: Daily?

P: Yep, daily.

I: Many hours a day?

P: Yes, many hours a day! More than I should be probably!

I: How often do your students get to use the Internet to find answers to problems or questions?

P: They are not on it this year. We haven't, they haven't. When they are on the computers, they are on the programs. They haven't really had access to...in my class, to use the web browsers. I know some of my students have in their enrichment classes, use it in other ways.

I: What skills do you think are important to online research?

P: Knowing how to search and then being able to type. Knowing what kinds of questions to ask to find your answers.

I: Can you talk more about knowing how to search and what that entails?

P: Knowing how to search something specific, using specific words, putting them in quotes so they look for those specific words. Knowing what sites to use that will give you the correct answer and not just those random sites that pop up and have nothing to do with what you are actually looking for. And then when you get to a site understanding how to use it.

I: Can you talk more about that?

P: For instance, last year they were doing inventions, so they searched their invention and Wikipedia would come up. Wikipedia is great. You would find the invention and then it would also give you links to the inventor or other things that they invented. So, knowing how to click on those hyperlinks and what those hyperlinks do and where they can send you and the other types of information you can get from that.

I: What strategies do you think students need to conduct Internet research?

P: The one thing they lack is typing and then just the confidence and the ability.

I: Talk about bit more about the confidence and ability.

P: I found last year with doing the Powerpoints and searching, they were not confident in their searching ability and when they found something, they weren't confident in if it was correct or not, or the right information. So just knowing that finding those sites that you know will give you what you need and being able to evaluate.

I: And ability?

P: The ability to have access to a computer. A lot of our students don't have computers at home and in my class, they don't have the ability to get on and just search. There isn't that time.

I: What skills do you think your students should possess or have knowledge of already in this area?

P: I think they should have the knowledge of being able to know how to get on to the Internet. And the knowledge of knowing how to somewhat search, where to type in that question.

I: So maybe understanding the layout and structure?

P: Yeah.

I: How proficient are your current students in these areas?

P: Not proficient. They struggle getting . . . We still struggle getting onto Launchpad.

I: Can you explain what Launchpad is?

P: Launchpad is where the students sign in using their login and it houses all of the sites they will need to access. For our computers, it's on their desktop and I always tell them it's the beach ball that says Launchpad, but we still always try to open up Internet Explorer and type in Launchpad. So, it's still a struggle.

I: So some of those icons, they still don't have knowledge of?

P: Yeah, the icons. . . the difference between Internet Explorer and Google Chrome.

I: How about logging into the computers? Are they proficient with logging in and basic computer use?

P: Yeah, basic computer use they get. Some still struggle with their log in and the typing of it. Instead of the number pad to the right, instead of using that, they will hunt and peck the numbers on the top. So just that basic awareness of a keyboard.

I: Thank you!

P: Your welcome!

I: That completes the first interview!

Interview #2

I: How did your lessons go this week?

P: They went really well. The kids were really excited. They loved using the touchscreen computers, the laptops. And they were really into it. I kind of gave them a little bit of background of why we're doing it and what it's for and they were really excited.

I: I know you had some trouble with computers not working. Tell me more about how that went.

P: Well, originally we had six computers and I had six kids at the back table. On the first day, we found out that two of the computers would not turn on, which was not too big of a deal. I just paired them up and they shared because the first day was just going through logging on, logging out, and all of the basic features of the laptop. Other days it's been a little more challenging just

because they are starting to get into their searching and I want them to search on their own and not with the help of somebody.

I: Planning for these lessons. Tell me your thoughts and feelings about that.

P: To be honest, the night before, the morning of. I kind of know where I want to go with them based on what you had shared with me before. I plan for a lot and get through only a bit of it.

I: Within the guided reading framework, what pieces are you able to get through?

P: We just started the planning process. Having them look through the planning, what do they need to do. So that would be kind of like the background knowledge of the text if we were reading a story. What is this story about, predicting, that kind of thing?

I: What do you think went really well this week?

P: I was really amazed at the kids when I gave them the question and they were able to on their own pull out that it was a two-part question and what parts they needed to answer first. That was really cool. I thought I was going to have to do a lot of prompting on that, but they got it!

I: That's good! What do you think students learned this week?

P: They definitely learned the basic skills of the laptop. They've also learned how to go about. . . we got into searching, so they typed in their first key words to search for their first part of the question and we discussed a little bit about how to go about looking at the results and which ones to choose and they were just clicking on the first ones. So teaching them a little about that they were like. . . Oh, ok, so this is good site because it has. . . this is a National Geographic site, or Wikipedia, or stuff like that they didn't know before.

I: So digging into the search results?

P: Yes.

I: About the key words, tell me more about how they learned to choose those key words from the question.

P: Well, the question was that. . . oh, I have to remember off the top of my head. . . that many countries have controlled Florida throughout Florida's history. Who has controlled Florida and how has their control or actions affected others? The first part that they are searching is who's controlled Florida. So, just knowing who, controlled, and Florida. That was the basic sentence, so they were able to type that in and get some good search results.

I: Identifying the key words, that was fairly easy for them?

P: Yes, for that particular part. That was a more basic question. It was shorter. Getting the second part is going to be interesting because it's how did their control and actions affect others. They are probably going to have to search for a couple different things to get that.

I: What evidence have they shown you to show they are able to generate key words effectively?

P: When they typed them in, I didn't tell them what to type in to their search engine. They went straight into Google, that was the search engine that they knew, and they found results. So they were able to get a list of the countries that have controlled Florida over the years.

I: Good! What was the most challenging thing this week?

P: The computers not working and their typing speed. Hunt and pecking. That took a little bit of time for us because I have them using a Word document to toggle between the web browser and a Word document, in keeping their notes and questions they are going back to so they can go back to it fairly easy. So that's been a challenge, getting them to do that. Typing. Typing their answers or the questions that they need to ask, or what steps they are taking.

I: Have you tried teaching the shortcuts like Control+C and Control+V?

P: Yes, it does not work on. We've had some issues with the Control+C and Control+V on these particular laptops. It ends up, in a Word doc, if you Control+C, it ends up cutting it instead of copying it.

I: Ok. So that's a challenge!

P: Yeah, so they know how to cut and paste. So we just do the function of cut and paste. The right click, copy. Or cut and then paste.

I: You've taught them to use the drop down menu.

P: Yeah.

I: So what do you think caused those challenges?

P: Their typing. I know that they have. . . you know the kids are on cell phones. They text. Texting is very different from typing. I don't think they have a lot of background knowledge with the keyboard. If they haven't really used it, you can tell by the typing. They hunt and peck or they know just a couple and then they have to ask, "ok, where's the space? How do I get the question mark?" So I tell them you have to shift and press that. So little simple things like that.

I: What was your role in instruction this week?

P: My role was just kind of guiding them through the process. Allowing them to tell me what they are doing and then using what they are telling me to guide them even further or to probe them a little more. “Well what do you mean by this? You found this, what does this mean? What should you do now?” That kind of thing.

I: Who would you say did the majority of the work in your lessons?

P: The kids did the majority of the work.

I: How do you know?

P: Because it was a lot of just me saying, “Ok, what are we doing? Where have you gotten?” “Oh, I’ve got this. I’m going back to this to type this out.” “Ok, how are you. . . what are you doing, what have you searched, what have you found?” That kind of thing. It was me asking them. Them just kind of doing it and “oh, hey, go to this website, this one’s got some good information.” So they were sharing amongst each other what they found.

I: So you saw a lot of collaboration between students?

P: Yes. And then with being short computers, they. . . the students that were sharing were, “Ok, hey go look at this one, I know this site, this is a good site.” Or “Let me type this. I can type faster than you.” So they helped each other out.

I: So it sound like that in some ways it was good thing that the computers didn’t work and they had to share.

P: Yeah!

I: How would you describe the role of the students this week?

P: They were kind of the leaders. I sat back and let them tell me where they were going and when I felt that they would maybe go off, not necessarily where they should. . .not that they were purposely going, but just not in the direction I wanted them to go, I would guide them back, but they did the majority of everything. They did the talking for the most part. I would ask some probing questions and they just kind of took over and went searching and trying to find their answer.

I: Which group are you doing this with?

P: My higher group.

I: What was their level of engagement?

P: A high level of engagement. They were motivated. As soon as we get done with whole group, they are the first group I pull. They are literally my first students to be at that back table ready to go. So they are thoroughly enjoying it.

I: Well, I will work on the computer issue to make sure every child has a working computer next week. Was there anything else you would like to add?

P: No, I think that's it. They are having fun. Hopefully on Monday, we will get into them actually going through and reading and me guiding them through how to pull out the key details and how to pull your information out. So that is where the plan is going.

I: Let me ask one more question. How did you come up with that question the group is trying to answer?

P: Since I do reading, I don't do science or social studies. To come up with a question to search, I thought of a subject that would be most easy to search for where they could find answers. Science is a little more hands-on with experiments, so I thought social studies was the best place to go. So I asked the social studies teachers what unit they were getting into. Then I still have a TE from last year. I looked at the big idea and some of the essential questions that were going to be covered and just kind of picked one out that was a little more challenging for them to answer since they were able to go on the Internet and they are my higher group. Then I just formed it.

I: Good job! Well, thank you!

Interview #3

I: Ok, so it's been a bit longer than a week, but that's ok, because there have been days that you haven't met with your groups, right?

P: Yes.

I: How have the lessons gone since our last interview?

P: Good, I can't remember where I was last interview. But, they have been going really well. The kids really enjoy it. We've gotten into them searching for the first part of the question because it was a two-part question and the results came up fairly easy for them. But there was one part that they were reading and we were talking about it going through like reading. What are we looking for as we read? One of the girls pulled out that the Spanish controlled Florida. And so her thinking was that Spanish . . . She speaks Spanish, she's from Puerto Rico. So she was like, oh, Puerto Rico? And I was like does it say Puerto Rico and then that's when we got into ok, so let's, now that we've pulled this site up, let's look at its text features. How can the text features help us? Over to the left hand side, because it was a Wikipedia, there was the timeline of who had control and it didn't say Spanish. It said Spain. So, she made the connection that oh it's not that they speak Spanish. It's that they're from Spain, so if there from

Spain, they're Spanish. So I was like yes. The next one said the British and then it said Great Britain. They make that connection using the text and using the text feature that they saw, the timeline.

I: How are they doing with multiple sites?

P: We did that in the Wikipedia you can click on the word Spain and it will take you to what they have on Spain for that particular part. So we worked on hyperlinks. What does it mean? Why is it blue? Where does it take us? That kind of thing. There was one, surprisingly the one that said Spanish was Puerto Rico (laughing) was the one that was like oh it will take us and we will be able to see what it talks about for Spain or for Great Britain or for this. And so I had them click on it and then I had two students that continued to click and click and click and then were totally not on anything that had to do with it. So I was like let's stay focused. This is how we can get in trouble with hyperlinks. We just keep clicking to learn about things, but it's not what we need to focus on.

I: Did the kids make that connection?

P: No, because there was only two who just kept clicking so I was like ok what's your question? What are you looking for? How does this site . . . does this site give you any information? They said no. I said well then why are we looking at it then. Oh because we went through here. And I said ok, but where do we need to go? So they had to go back and restart and figure out where they were before they got off track!

I: So how have the students reacted to these lessons?

P: There's a lot more conversation about Florida and they have found whose controlled . . . so they are talking a lot more about what they've learned and then even in their conversations with each other because they are for the most part, they are all on the same site talking about what they are finding. Someone will say oh I found this and then someone will correct them and say no, it actually says, if you read it, it says this and this is what it means. So I just kind of just, yeah, ok, why? Why do you think that? And then they talk about it.

I: What other kinds of prompts do you provide them with?

P: When they have . . . one of them read something about Cuba and took it as Cuba controlling Florida. And I said, ok wait, but you've read and you've seen the timeline . . . Is Cuba on there, on that one timeline on that one site? No. I said ok, so how do you feel about Cuba controlling Florida? She's like I don't know; it doesn't make sense. So I said, ok, well how would we find out if Cuba controlled Florida? Well I'd just do another search. Ok, so do you want to do it? So she just opened up another window and searched and found that that's one of the reasons why Spain traded with Great Britain was for Cuba. So, she made that connection.

I: That's great! Are all of the kids on the same site or are they searching on different sites usually?

P: The majority of them are on the same site. I have the two that I've had the challenges with of getting them to talk and they are doing what they need to be doing but they're not in the discussion a part of the group. They are kind of like those outsiders. And they've . . . one of them went to a site when we talked about first when they did the key words and they typed it in and all of the results came up. . . we talked about which was a good one to go to and that's when we talked about the different endings and reading the little phrases and he clicked on one and he was like what is this? I was like, well, let's go back. This is the one you clicked on. Read this. Does this give you any sort of, you know, tell you anything about what you were looking for? He was like, no. And I said so why did you click on it? He said I don't know. He was just clicking to click. That's when he discovered that noticing the little brief description of what the sites going to give you can help.

I: What do you think has gone really well?

P: Their searching capabilities. They've . . . the majority of them come across. . . like I said the Cuba, they come across it. They know, I don't know if it's background knowledge, but they know when something doesn't seem right. I don't know if it's that they are the higher group and they are able to read and comprehend better, but knowing when to search to double check their answers of what they found has been really impressive.

I: How about key words? Have they improved with choosing key words?

P: Yes, and going back. When I talked about the Cuba, going back and you know Cuba, control, Florida. . . the question mark. . . Did it? Going back and looking at the different sites to find it. They've definitely come up with that and even within looking . . . because they have all found what countries have controlled, so now they have just started on how it affected the people.

I: Overall, what do you think students have learned?

P: They've learned how to navigate a website. I think that this group has really learned how text features actually play a role in adding to what they are reading.

I: Can you explain that a bit more?

P: Just when they first went to the Wikipedia site they just straight out just read. They blew it up because they liked playing with the screen and were reading sentence by sentence by sentence. When I went around I said, ok, now, shrink it back down. Look. Let's look at this page. What does this page offer us? And going back they said oh, this is over here and looking at that time that was out there and it even broke down. They gave a description about Florida and then they have their outline of what is in this whole article. Learning that they can really pinpoint who controlled and then clicking on those hyperlinks to send them to Spain and how it

controlled Florida and the effects and being able to use those. . .that outline. Then the text feature when they were reading.

I: So you can see the student growth. What evidences do you see besides them clicking and knowing when to go back? Is there anything else?

P: Their conversations with each other. Oh hey did you look at this? This is where I found this. That kind of conversation. They're just able to make that connection and then help others and get the others kind of on the same page that they're on.

I: What was most challenging or what has been most challenging?

P: Well, the computers themselves and the struggle to keep them working! (laughing). And then the two students that don't necessarily engage in the group discussion of what we're doing. Getting them to participate. It was easier with the other four. They kind of just all got in there. Even if they weren't sitting next to each other, they would be talking across the table. Hey, so and so, check this out! Go to this page it shows you this. Where the other two were just kind of very quietly taking notes.

I: How did you have them take notes?

P: I started having them use the Word document. But then we started having computer issues, so then we went to paper and pencil and they just kept a little binder, a little notepad of what they had found.

I: Did have them do it in a format?

P: I had them write the original question. Then we talked about. . .and this was back when we first started. . .the parts of the question and then I had them create even for each question, different questions that they could ask or search for, key words to get answers. So that had that and then they would break it down. So they broke it down into question 1 and then they had a list of all of the countries that controlled Florida and they were just getting into question 2 was how they affected the people.

I: So you had them break it down by question and recording answers they found in response to each question?

P: Yep.

I: So you said the computers have been challenging. When we talked last time you said that some of them wouldn't turn on and the students had to share. What other issues have you found with the computers? Those technology issues?

P: I think they had so much fun with these computers that sometimes they would get off task with all of the new features that were on it, so instead of using the key board to type, they would pull the keyboard up on the screen and that would take them longer. Then they'd have to minimize it, so just knowing when to use the keyboard, the actual keyboard, and when to use the actual screen to do things. They are new with it and having fun, so that was a little bit of a . . .ok, guys, you are typing out a bunch, you know especially in the word document. If they were just putting in a key word, fine. But when they were typing their results or what they found, when you're typing a lot just teaching them to use the keyboard.

I: Were there any other features you found distracting?

P: Sometimes we would get the computers that weren't logged out from the previous student that had used it. So them figuring out how to log it out. Some of them would just shut it down so it would take time to log in. Also, when we had the same computers over and over and I had assigned them, the first time was always the longest because it had to log in and log out, log in and log out and then it got quicker because they were using the same ones. But then when the computers started dying, every time we would get new computers, it would take that extra couple of minutes for them to log in and get onto the Internet.

I: What other issues did you find or challenges did you face?

P: Probably the touch screen. They wanted to use that the most. They had difficulty minimizing things because they weren't using the tracking pad. They would just use their fingers and their fingers are bulky. So, instead of pressing minimize, they would press the exit button and then it would shut it out completely. They would have to reopen it, start over again. That took some time.

I: Anything else you can think of?

P: I don't think so.

I: What was your role in instruction?

P: I'd say facilitator of questioning. They did the majority of the searching, the working, the finding, the talking. When they were discussing things amongst the group, I'd find ways to get them to look more in depth at something. So just kind of questioning them. Ok why are you doing that? Why do you think that? Or do you think that's true? And having them kind of go back to the text. What did the text actually say? That type of thing.

I: Did they have trouble accessing or reading the text?

P: No. We came across words that were in a different language. I would have to explain it. They would say what is this word, what is this? I would explain well that's how you pronounce it.

I: What role did your students play?

P: I don't know. I mean they did the majority of the work. They led the conversations. They had the conversation. I didn't have to start it with them. They would get right into it and start discussing things and helping each other. And then I just, I would just pop in to get them to give me more and to get them to think in a different way, to guide them. But they did the majority of it.

I: Within the aspects or framework of guided reading, where did you spend the most time?

P: Questioning. I don't know if that's part of it, but . . . We had the question and they knew what they were looking for. Then they were reading. So even within what they found and their discussion. . . because every day we were kind of looking for. . . even though we had two questions we were looking for, even within each day we only got to a certain part of that question. So it was their discussion and then me just guiding it a little bit. So, just questioning them and their thinking.

I: That's good! Thank you very much!

APPENDIX C
CURRICULUM MATERIALS

Web-Searching Basics If-Then Chart

If students . . .	Then go to lesson . . .
Don't know how to access the Web	Web Browser and Search Engine Basics
Are unable to identify a web browser and/or search engine	Web Browser and Search Engine Basics
Cannot differentiate between the web address bar and search toolbar	Web Browser and Search Engine Basics
Struggle with web browser navigation	General Navigation Basics Toggling Through the Web
Do not know how to go back to a previous webpage they visited	General Navigation Basics
Always ask for help when they come across an error	General Navigation Basics
Have trouble managing multiple webpages at once	Toggling Through the Web
Often ineffectively close windows and reopen them	Toggling Through the Web
Need practice toggling between tabs in a web browser and other windows or applications	Toggling Through the Web

Web-Searching Basics: Web Browser and Search Engine Layout

Overview: In order for students to successfully engage in online research tasks, they must first understand the layout and function of the tools they will use (Eagleton & Dobler, 2015). Often students confuse the address bar with the search toolbar. In this lesson, students will learn about the difference between an address bar and a search toolbar and know when to use each feature.

Learning Targets:

- Students will be able to locate and open a web browser.
- Students will be able to locate and open a search engine.
- Students will understand the difference between the web address bar and the search toolbar.
- Students will be able to type web addresses in the web address bar.
- Students will be able to type key words into the correct location of various search engines.

Standards:

- ISTE NETS-S 6.a Understand and use technology systems
- ISTE NETS-S 6.b Select and use applications effectively and productively

Optional Assessment: Observe students going directly to a website using the address bar or conducting a simple search on a general topic using a search engine and the search toolbar. Observe students' ability to identify and open an appropriate web browser, open a common search engine, and differentiate between the web address bar and search toolbar. Record student mastery on the Web-Searching Basics Class Checklist.

Extensions/Scaffolds:

- Repeat the lesson, introducing students to multiple web browsers
- Introduce students to one search engine at a time.

Key Vocabulary:

Search engine

Website

Web address

Icon

Web browser

Address bar

Search toolbar

Hyperlink

Before Reading

Introduction

1. Tell students you will be examining different web browsers that can be used to get to resources on the Internet and **search engines** that find specific information they are looking for on the web.
2. Have students brainstorm some **websites** they like to visit. Record some of these **website** names and **web addresses** (if known) on chart paper. Help students distinguish between **websites** and **search engines** as applicable during the discussion.

Teaching Points

3. Show students the **icons** of the **web browsers** available on their computers. Explain that these icons are **web browsers**. Each looks a bit different, but they all serve the same purpose of getting to resources on the Internet. Have students double-click on the main **search engine** they will use in the classroom.



4. Tell students that they will find one of their favorite **websites** on the Internet. Guide students to type one of the web addresses they have previously identified into the **address bar** in the web browser and go directly to the **website**. Help students identify that they can go directly to specific **websites** if they know the **web address** by typing the **web address** into this **address bar**.
5. Explain that often people don't remember the **web address** they want to visit, want to figure out the answer to a question, or just want to know more about a topic. Tell students that in these cases, people use a **search engine**. Guide students to type in the **web address** of a major **search engine** into the **address bar**.
 - www.google.com
 - www.bing.com

Teacher Notes

Teaching Tip

The most widely used web browsers are Internet Explorer, Google Chrome, Safari, and Firefox. Only display the icons students have access to on their computers.

- www.yahoo.com
 - www.ask.com
 - www.yahooligans.com (Student-friendly)
 - www.kidrex.org (Student-friendly)
6. Show students where to find the **search toolbar** on the **search engine**. Using a think aloud, model how to type in a **key word** on a broad topic into the **search toolbar** and press enter to find the results. Tell students that the search results are **hyperlinks** to websites that give information on the topic.
- The **search toolbar** is usually located in the middle of the **search engine** page. See, here it is on this **search engine** (or name search engine). The **search toolbar** is where I type in **key words** to find information. I want to search for information on how electricity works, so I will type the **key word** <electricity> right here in the **search toolbar** and press enter to begin the search. Look at all of the search results that the **search engine** brings up. Each of these search results is a **hyperlink** that will take me to a website on with information on electricity.*

Misconception Alert!

Many students will likely confuse the search toolbar with the web address bar. Be sure to use precise vocabulary when referring to these features.

During Reading

Have students go to other websites by typing direct web addresses into the address bar and by typing key words into the search toolbar in a search engine. Support student understanding and use of the address bar, search engine, and search toolbar.

Suggested Prompts

Model	Guide	Confirm
<ul style="list-style-type: none">• Watch me go directly to the website. . .• Watch how I go to a search engine and type a key word into the search toolbar.• I use the address bar to type in a web address.• I use the search toolbar to type in key words.	<ul style="list-style-type: none">• That's a web address. Use the address bar to go directly to the website.• Be sure to use a search engine if you want to know more about a topic.• Type key words directly into the search toolbar.• Now, go to a search engine and find the search toolbar.	<ul style="list-style-type: none">• You recognized that was a web address and went directly to the website using the address bar.• I like the way you typed the key words directly into the search toolbar.

Discussion Points



Invite students to share their ideas and strategies with using the web address bar and search engine as they are exploring.

After Reading

Reflection

Invite students to share their personal experiences and responses about the use of the web address bar and search engine as they are exploring.

Suggested Language: *What did you discover about web browsers and search engines?*

Points to Remember

Lead students to discuss the following points:

- A web **address bar** is used to go directly to a **website** if you know the **web address**.

A **search engine** is used to find information by typing **key words** into the **search toolbar**.

Web-Searching Basics: General Navigation Basics

Overview: Effective online inquiries require readers to navigate back and forth between search results and webpages (Leu et al., 2008). Readers must also go back and forth between hyperlinks from one webpage or website to another as they cross-check information (Coiro & Dobler, 2007). Occasionally, webpages fail to load correctly or newer information is posted while the reader is on that page. In this lesson, students will learn to use the refresh, back, and forwards buttons effectively.

Learning Targets:

- Students will be able to identify and explain the purpose of the refresh, back, and forward buttons on a web browser.

Standards:

- ISTE NETS-S 6.a Understand and use technology systems
- ISTE NETS-S 6.b Select and use applications effectively and productively

Optional Assessment: Observe students conducting a simple search on a general topic, moving back and forth between the search results and hyperlinked websites. Identify whether students use the back, forward, and refresh buttons appropriately. Observe how students respond when they come across an error when searching for information. Record student mastery on the Web-Searching Basics Class Checklist.

Extensions/Scaffolds:

- Repeat the lesson focusing on different web browsers.
- Break the lesson into separate lessons in which one or two icons are featured.
- Compare the icons on different web browsers.
- Have students play a matching game with the back, forward, and refresh icons from different web browsers.

Key Vocabulary:

Web browser
Icon
Search engine

Search results
Hyperlink
Back

Forward
Refresh

Before Reading

Introduction

9. Explain that all **web browsers** include basic features, indicated by **icons**, or symbols, that help web users navigate through the web. Each of the **icons** looks a little bit different and is in a different place in each **web browser**. Tell students that they will explore each of these important **icons** today.

Teaching Points

10. Ask students to open a **web browser** and navigate to a **search engine**.
11. Have students conduct a simple search on a broad teacher-directed topic, such as <hurricane>. Conduct the search on a teacher computer as well. Remind students that the search results are displayed as **hyperlinks**, which take them to websites that are related to the **key words** they put into the **search engine**.
12. Model how to use the **hyperlinks** to navigate to one of the websites with a teacher think-aloud. Have students complete the same actions on their computers.

*Hmm, the second **hyperlink** says National Hurricane Center. I think I will go to this website and see what it says about hurricanes. (Click on the **hyperlink**.) This text looks too complicated for me. Maybe I should go back to the **search results** to see if there is a website that is easier for me to understand. To go back to a page, I went to previously, I hit the back arrow **icon**.*
13. Tell students that the other **icons** on the page also help them go **forward** to a page they just visited and **refresh** a page to get the newest information that has been posted on a page or if a page doesn't come up correctly.

*For example, if I am reading a breaking story on a news page, I might want to **refresh** the page to see if there is any new information in the breaking news story. Another time I might hit **refresh** is if a page doesn't look right, like if the pictures don't come up or if the web browser says there was an error.*

Teacher Notes

Teaching Tip

Occasionally websites fail to load correctly or even load at all. Other times students click on broken links. Error codes are sometimes displayed either on the web page or in a pop up box. Help students learn to identify these errors or technical difficulties and determine when it is appropriate to use the back, forward, and refresh icons.

If one of these errors occurs for students during this lesson, be sure use this as a teachable moment to show students what to do in such cases.

During Reading

Allow students to conduct a student directed simple search on a broad topic. As students find information relevant to their topic, encourage them to toggle back and forth between hyperlinks using the navigation buttons. Encourage peer discussion of their strategies and findings.

Suggested Prompts

Model	Guide	Confirm
<ul style="list-style-type: none">• When I want to go back to a page I just read, I click the back icon.• When I want to go forward to a page I just read, I click the forward icon.• If a page gives you an error, click the refresh icon.	<ul style="list-style-type: none">• If that information doesn't help you on that webpage, what can you click to go back to the previous page?• I see you accidentally clicked the back icon too many times. Is there an icon you can click to go forward?• I see your webpage didn't load correctly, what icon can you click to refresh the page?	<ul style="list-style-type: none">• I like how you used the back icon to go back to the search results page.• Those pictures didn't load all of the way did they? Good job remembering to click the refresh icon to fix it!

Discussion Points



Invite students to share the way they used the **back, forward, and refresh icons** as they searched for information on the topic. Encourage students to think aloud to others as they are working.

Background Knowledge

Most web users do not know the meaning of error codes that may appear when browsing the web. However, it is useful for frequent web users to be able to identify the following error codes:

- 404 Not Found-The particular resource could not be found at this time.
- 500 Internal Server Error-The data you are requesting from the server is not able at this time.

In most cases, when these errors appear attempting to refresh or click on the hyperlink again will result in the same error code.

After Reading

Reflection

Invite students to share their personal experiences and purposes for using the **back, forward, and refresh icons** as they were working.

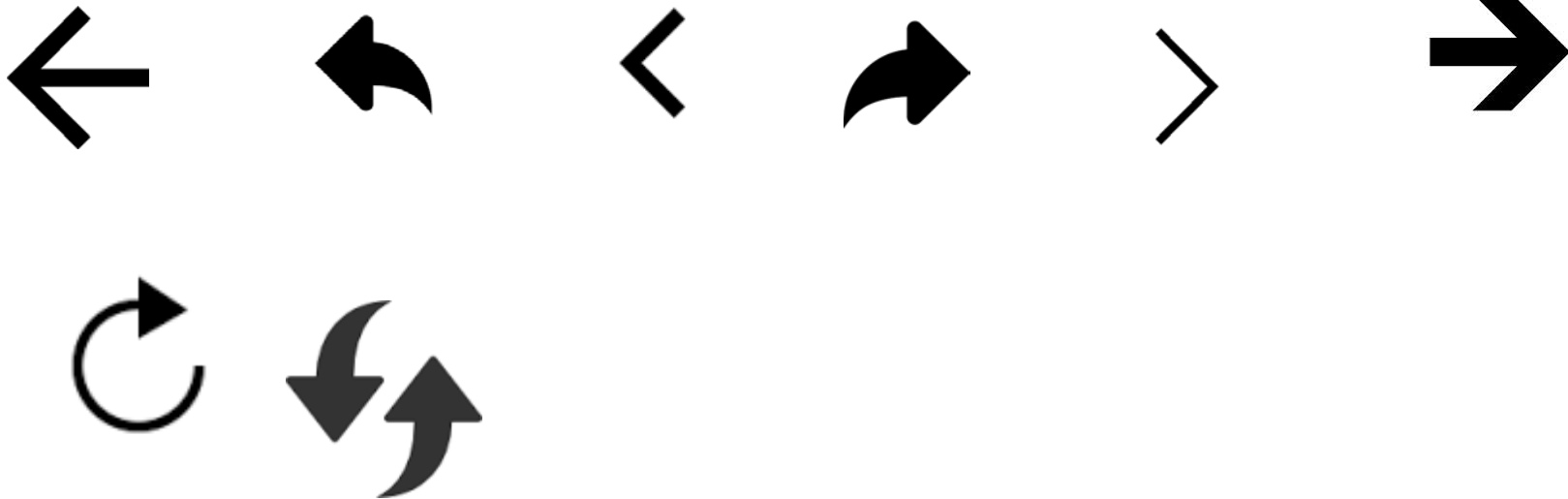
Suggested Language: *When did you need to use the (back, forward, refresh) icon? How did these icons help you?*

Points to Remember

During the discussion, lead students to:

- Identify the the **back, forward, and refresh icons**.
- Discuss the purpose of the **back, forward, and refresh icons**.

Icon Resources:



Web-Searching Basics: Toggling through the Web

Overview: As readers search for new information in a web search, they often have new ideas for searches or want information on a related, but different topic or aspect of the topic. In these situations, readers open new tabs to conduct these searches. As readers read through information on the web, they compare information from different sources on different tabs of a web browser. Also, readers often toggle between different windows of applications. For example, when note-taking on information found on the web, readers will toggle between the web browser and a Word document. In this lesson, students will learn to open new tabs and windows and toggle between them.

Learning Targets:

- Students will be able to open new windows and maximize/minimize windows in a web browser.
- Students will be able to open new tabs and toggle between tabs.

Standards:

ISTE NETS-S 6.a Understand and use technology systems

ISTE NETS-S 6.b Select and use applications effectively and productively

Optional Assessment: Observe students conducting a simple search on a general topic, toggling back and forth between different tabs and windows for appropriate purposes. Record student mastery on the Web-Searching Basics Class Checklist.

Extensions/Scaffolds:

- Teach students who are proficient toggling between windows/tabs using the mouse how to toggle using keyboard shortcuts.

Key Vocabulary:

Web browser

Icon

Back

Forward

Refresh

Tab

Window

Toggle

Before Reading

Introduction or Review

1. Invite students to share some of the information they have been searching for in previous lessons. After a brief time for sharing, ask students, “What do you do when you want to compare information on two different websites or webpages or across applications?” Allow students to share their experiences. Tell students that they will learn one way to compare information.

Teaching Points

2. Have students open a **web browser**. Explain that each time they open a **web browser**, they are opening up a **window**. Tell students that within a **window**, they can open up more than one **tab** to view multiple webpages.
3. Review the **back**, **forward**, and **refresh icons** with students. Show students the **icon** that opens a new **tab**.
4. Conduct a simple search with students and model one scenario in which they might open a new **tab**.

*I'm searching for interesting places to visit in St. Augustine and I've come across an interesting fort, the Castillo de San Marcos. I'd like to know more about the history behind this fort. Since I also want to stay on this current page, I will open a new **tab** and do a new search for the history of Castillo de San Marcos. First, I click on the **tab icon** (demonstrate). Then I can go to a search engine to conduct my search. Now, if I want to go to the other page I have open, I click on the **tab** that has the title of the page I was on. This feature is useful because I can open more than one page at a time and **toggle** (demonstrate how you click back and forth between tabs) between different pages to find the information I need.*

5. Next, explain to students that sometimes they will need to **toggle** between two different applications, such as when taking notes in a Word document from a webpage in a **web browser**. Show students the icons that **maximize**, **minimize**, and **close** windows and explain the purpose of each to students.

Teacher Notes

Misconception Alert!

Students may confuse new tabs and new windows. Be sure to clearly explain the difference and help students understand reasons for opening new tabs and reasons for opening new windows. If students continue to struggle with this concept, consider creating an anchor chart with students detailing circumstances for opening a tab and opening a window.

During Reading

Have students search for information and take notes on their topic in a Word document. Guide students in opening and toggling between more than one tab in a web browser. Guide students in maximizing and minimizing windows to toggle between applications and/or multiple windows of a web browser. Encourage peer discussion of their strategies and purposes for toggling between tabs and windows.

Suggested Prompts

Model	Guide	Confirm
<ul style="list-style-type: none">That seems like a new aspect to search for. You can open a new tab in the window by clicking on the tab icon. Then you can go to a search engine to search for that information.Go back and check that information against the other webpage by clicking on the tab that has the name of the webpage.	<ul style="list-style-type: none">Since you want to search for another piece of information without losing that page, which icon could you click to open a new tab?Remember to click the tab that has the title of the webpage you want to toggle between tabs.Minimize that window to go to your Word document with your notes.Be careful not to completely close the window when you go to the Word document!	<ul style="list-style-type: none">Yes! You remembered to open a new tab by clicking the tab icon to do a new search.I like the way you toggle between tabs to compare the information on the webpages you have open.You remembered to minimize the web browser to toggle back and forth between the web browser and your Word document.

Discussion Points



Invite students to share the way they use the **tab**, **maximize**, **minimize**, and **close icons** to **toggle** between **tabs** and **windows**. Encourage students to think aloud to others as they working.

Background Knowledge

Keyboard shortcuts are combinations of keys that can be used to perform a task that may also be accomplished through mouse clicks. However, keyboard shortcuts are generally faster to use and increase productivity. Listed below are common keyboard shortcuts every computer and web user should know.

Ctrl + C	Copy highlighted text
Ctrl + V	Paste from clipboard
Ctrl + X	Cut highlighted text
Ctrl + F	Find words in the application
Ctrl + Tab	Toggle between open tabs
Ctrl + S	Save

After Reading

Reflection

Invite students to share their personal experiences and purposes for using the **tab**, **maximize**, **minimize**, and **close icons** to **toggle** between **tabs** and **windows** as they were working.

Suggested Language: *When did you need to use the (tab, maximize, minimize, close) icon? How did these icons help you?*

Points to Remember

During the discussion, lead students to:

- Identify the **tab**, **maximize**, **minimize**, and **close icons**.
 - Discuss the purpose of the **tab**, **maximize**, **minimize**, and **close icons**.
-

Identifying a Question/Problem If-Then Chart

If students . . .	Then go to lesson . . .
Often provide irrelevant answers to teacher-generated questions	Strategies for Understanding Questions

Identifying a Problem/Question: Strategies for Understanding Questions

Overview: Questions are at the heart of teaching and learning. In online research, students must be able to understand the purpose of particular questions in order to generate key words that are related to the topic (Leu et al., 2013). This lesson focuses on specific strategies students may use to understand questions. These strategies are:

- Reread a question to ensure understanding
- Paraphrase a question
- Take notes on a question
- Think about the needs of the person asking the question

Learning Targets:

- Students will be able to use general strategies to ensure initial understanding of a question.

Standards:

- ISTE NETS-S 4.a Identify and define authentic problems and significant questions for investigation

Optional Assessment:

Provide students with a teacher generated question and have them paraphrase the question in written or oral format.

Extensions/Scaffolds:

- Break the lesson into a separate lesson for each strategy for understanding questions.
- Explore the different purposes of question words (who, what, where, when, why, how).
- Have students go on a question hunt, creating a log of questions they discover in the world around them (from books, magazines, conversations, etc.). After the question hunt, have students sort the questions into self-created categories. For example, students may sort questions by question word, verb, or type of information needed to answer the question.

Key Vocabulary:

Question

Paragraph

Before Reading

Introduction or Review

1. Ask students to think about what the word **question** means. Allow a few students to respond and lead a short discussion of their responses. Lead students to think about how **questions** help readers activate their prior knowledge, check their comprehension, clarify confusing ideas in a text, and stay on task when reading.
2. Next ask students to think about words we use to write **questions**. Record their responses on chart paper.

Teaching Points

3. Tell students that online readers must have a **question** in mind as they read. In order to answer these **questions**, online readers must think carefully about the **question** to be sure he/she understands what it is asking.
4. Pose a **question** to students from a Question and Answer book for kids. Model how to identify the important words, take notes, **paraphrase**, reread the **question**, and think about the needs of the question asker through a think aloud.

*Here is a **question** from the Time for Kids: Big Book of Why. “What makes apes and monkeys different”? (Have the **question** visible to students on chart paper or a whiteboard.) In this **question**, I see three really important words that I need to pay attention to. First, the topic of the **question** is apes and monkeys. I will underline those words. Now I have to figure out what the **question** is asking about apes and monkey. I see the word different, which I will underline because it seems important in the question. Usually words like alike and different are used to compare things. So in this **question** the question asker must be comparing apes and monkeys. I know that apes and monkeys look alike, but they must be different since they are different species. Therefore, the question asker wants to know the differences between apes and monkeys. To be sure I understand the **question**, I will **paraphrase** it, or say it another way. Let me go back to the **question** and write the words I underlined*

Teacher Notes

Background Knowledge

Paraphrasing isn't just a strategy used to understand a question! Paraphrasing is an essential skill for both reading and writing as well. Students paraphrase to monitor their understanding of a text and also convey information they have learned to others through writing. However, many students and teachers find paraphrasing to be a hard skill to master. Check out this Read Write Think lesson for help teaching paraphrasing as a reading comprehension skill.

[I Used My Own Words!](#)
[Paraphrasing Informational Texts](#)

over to the side (apes, monkeys, different). One way I could **paraphrase** the **question** is “What is the difference between apes and monkeys?” or “How are apes and monkeys different?” When I go back and reread the initial **question**, “What makes apes and monkeys different?” I now have a better understand of what the **question** is asking.

During Reading

Give all students a copy of a question and answer book, such as *Time for Kids Big Book of Why* or a book from Scholastic’s Question and Answer series. Have students choose **questions** from the book and practice using strategies to understand the **question**.

Encourage students to underline important words, take notes, **paraphrase**, think about the needs of the question asker, and reread the **question**.

Suggested Prompts

Model	Guide	Confirm
<ul style="list-style-type: none"> I think the question asker wants to know . . . from this question. The topic words of this question are . . . Another important word is . . . This word is important because. . Another way I could ask this question is . . . I’m going to reread the question to make sure it makes sense with my 	<ul style="list-style-type: none"> First, figure out which words identify the topic of the question. Next, figure out what the question is asking about the topic. Use the important words you identified to paraphrase the question. Now that you have paraphrased the question, reread the 	<ul style="list-style-type: none"> I like how you identified the important words in the question and used them to paraphrase the question. Your paraphrased question makes sense with the original question when you reread it. You did a nice job of thinking about the

Misconception Alert!

When considering the needs of the question asker, students may confuse their own needs with that of the question asker. While these may be similar, help students understand that they may have different background knowledge than the person posing the question. Therefore, be sure to help students differentiate between their own needs and the needs of the question asker.

paraphrased question.

question to see if it makes sense with what you thought.

- Does that make sense with what the question asker wants to know?

needs of the person asking the **question** as you identified what the **question** is asking.

Discussion Points



Invite students to share their findings and strategies for understanding **questions** as they are analyzing **questions** from the question and answer book.

After Reading

Reflection

Invite students to share their strategies for identifying important words, **paraphrasing**, and rereading the **question** to help them understand the **question**. Guide students to reflect on how thinking about the needs of the person asking the **question** helps them understand the **question** better. If students identify other strategies for understanding a **question**, encourage them to share the strategies with the group.

Suggested Language: *What is important to understand about a **question**? How can you go about figuring out what a **question** is asking?*

Points to Remember

During the discussion, lead students to notice and note the following important strategies for understanding **questions** (which may be recorded on an anchor chart):

- Identify important words in the **question**.
- **Paraphrase** the **question**.
- Think about the needs of the person asking the **question**.
- Reread the **question**.

Teaching Tip

Questions vary in complexity and their answers directly correlate to their complexity. Simple questions can be answer with basic facts, while more complex questions require research and decision-making skills to provide a sufficient answer. After this lesson, expose students to lots and lots of different questions and let them discover patterns within different types questions. See extensions/scaffolds within this lesson for activity ideas.

- Other strategies discovered by students.

In addition, you may want to have students identify and record words that identify **questions** (who, what, where, when, why, and how).

Locating Information If/Then Chart

If students . . .	Then go to lesson . . .
Type complete questions into search toolbars	Generating Related Key Words from Questions
Are unable to identify words or phrases related to their question	Generating Related Key Words from Questions
Confuse the topic of their question with the focus of their question	Generating Related Key Words from Questions
Do not know where to find the title, snippet, or URL of individual search results on a search engine results page	Understanding the Structure of a Search Engine Results Page
Often confuse advertisements for legitimate search results	Understanding the Structure of a Search Engine Results Page
Do not understand or identify the bold words in search results	Understanding Search Engine Results
Almost always choose the first link to visit first in a search engine results page	Understanding Search Engine Results

Locating Information: Generating Related Key Words from Questions

Overview: Selecting just right key words is imperative to online research. Once online readers have strategies for understanding questions, they must then select key words that will illicit related results from a web search. Research has found that younger students typically create key words using single words, multiple words, phrases, and whole questions (Eagleton & Guinee, 2002; Guinee et al., 2003). This lesson focuses on the specific key word generation strategy of choosing key words that are related to the topic and focus of a question (Eagleton & Dobler, 2015; Harrison et al., 2014). The topic + focus strategy for generating key words has been found to be the most useful strategy for locating information quickly (Eagleton & Dobler, 2015).

Learning Targets:

- Students will be able to brainstorm key words related to the topic and focus of a question.

Standards:

- ISTE NETS-S 4.a Identify and define authentic problems and significant questions for investigation
- LAFS.4.RI.1.2 Determine the main idea of a text and explain how it is supported by key details; summarize a text

Optional Assessment:

Keywords worksheet (brainstorm key words from questions) (identify if key words are strong or weak)

Extensions/Scaffolds:

- Repeat the lesson focusing on student generated questions.
- Break the lesson into two separate lessons, one on a question topic and one on the focus of a question.

Key Vocabulary:

Key words

Topic

Focus

Before Reading

Introduction or Review

1. Review the purpose of questions and strategies for understanding questions with students.
2. Tell students that strategic online readers always begin their research with at least one guiding question about their topic. Sometimes these questions come from books and other time these questions come from a reader's curiosity. Either way, one must think about the question(s) in order to come up with **key words** to type into search engines.
3. Explain that today students will be examining questions and answers to those questions to see how an author poses a question and answers it to identify the **topic** and **focus** of the question. Then we will use that information to identify **key words**.

Teaching Points

4. Distribute copies of a common question and answer book to students, such as from the Scholastic Question and Answer series or the Time for Kids: Big Book of Why.
5. Have students turn to a page that has a question and answer. Read the question aloud to students and have students identify the important words in the question and paraphrase it to ensure understanding.
6. Next read the answer aloud to students. Explain to students that the answer has many of the same words as in the question. Note these words with students as the **topic** and the **focus** of the question and define them as key words.
7. Read another question and model how to determine which words are **key words** in the question. Then read the answer to confirm these as key words.

*Let me think about this question, "Can airplanes fly in space?" I think the key words in this question are airplane and space because the **topic** is airplanes and the **focus** is space. One way I could paraphrase the question is, "Can I take an airplane into space?" Both of these questions use the same **key words** I*

Teacher Notes

Background Knowledge

This lesson uses question and answer books to allow students to see how key words in the questions are used in the answers. Guide students to make this connection as they begin to understand the importance of generating specific key words related to their question.

*identified. Now let me read the answer. (Read aloud to students.) Within the answer, I see the word airplane and plane many times, which I can confirm as the **topic**. I also see the word space many times, which is the **focus**, confirming the **key words** I chose are important to the question. I also see that I could add plane to my key word list, which is a synonym for airplane.*

During Reading

Have students read other questions. Encourage them to identify the key words in the question before reading the answer and then use the answer to confirm and expand the key word list for that question.

Suggested Prompts

Model	Guide	Confirm
<ul style="list-style-type: none"> Paraphrase your question first to see what words are used in both questions. You could paraphrase this question like . . . In your question, the topic of the question is. . . In your question, the focus of the question is . . . 	<ul style="list-style-type: none"> As you read the question, think about the topic. Now think about the focus of the question. Does the answer provided confirm your key words as the topic and focus of the question? Remember, you should only have a couple of key words. 	<ul style="list-style-type: none"> You did a great job of determining the topic and focus of the question as key words. Good work. In your identified key words, I see the topic of the question . . . and the focus of the question . . .

Misconception Alert!

Students may easily confuse the topic for the purpose and vice versa. Guide students to understand that the topic is the broad subject under examination, while the focus is one aspect of that topic.

Discussion Points



Invite students to share their **key words** with others as they identify them for specific questions. If students choose the same question, have this pair of students compare their **key words** and discuss similarities and differences. Encourage students to ask questions that clarify the difference between the **topic** and **focus** of a question as well as questions that clarify if a word is a **key word** or not. Be sure to have students defend their **key words** by explaining their thinking to others.

After Reading

Reflection

Invite students to choose one question and share the **key words** they identified with others. Have students justify their selection of key words by explaining their thinking. Invite students to share different strategies, other than identifying the **topic** and **focus** of the question, for selecting **key words**.

Suggested Language: *Share your question and **key words** you identified. Explain why you selected those **key words**. Was your selection of **key words** confirmed in the answer provided in the text?*

Points to Remember

During the discussion, lead students to:

- Understand what **key words** are
- Identify key words as the **topic** and **focus** of a question
- Begin to identify strong and weak **key words**

Locating Information: Understanding the Structure of a Search Engine Results Page

Overview: In order to successfully locate information through a search engine, online readers must be familiar with the features of a search engine results page (Coiro & Dobler, 2007). This includes knowing which results are paid advertisement and locating relevant information in non-sponsored search engine results. In this lesson, students will examine the structure and learn to identify key features of a search engine results page.

Learning Targets:

- Students will understand the structure of a search results page.
- Students will be able to identify the features of a search results page (title, snippet, URL, bold words)
- Students will be able to identify the difference between advertising and sponsored links and those that are not.

Standards:

- ISTE NETS-S 3.b Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media
- ISTE NETS-S 3.c Evaluate and select information sources and digital tools based on the appropriateness to specific tasks
- LAFS.4.RI.2.5 Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.

Assessment:

Observe students reading the search results page. Ask students to identify and name specific features.

Extensions/Scaffolds:

- Break the lesson into separate lessons in which one to a few key features of a search engine results page is highlighted.
- Allow students to explore all aspects of the search engine results page, discovering features for themselves (such as advertisements, etc.).

Key Vocabulary:

Search results page
Title

Snippet
URL

Advertisement (ad)
Sponsored link

Before Reading

Introduction or Review

1. Explain to students that once you have identified key words for your question or problem, you must go to a search engine to find related information.
2. Say to students, *Today we will look at **search results pages** to learn what information they give and where to find the information you need.*
3. Tell students that you are curious about earthquakes, so your guiding inquiry question is “What causes earthquakes?” Probe students for key word suggestions to briefly review this skill.
4. Use students’ suggestions or tell students that you chose the key words “causes of earthquakes”.

Teaching Points

5. On a projector, open a search engine and search for <causes of earthquakes>.
6. When the **search results page** loads, ask students to point out features of the **search results page** that they notice. Guide students to notice the **titles of webpages, snippets, and URLs**.
7. Model how to identify an **advertising link** versus a link that is not with a think aloud.

*Here I notice that these links look a bit different from the rest. I notice that these links have the word **Ad** near them. These links are known as **advertising links** or **sponsored links**. **Advertising** or **sponsored links** are like **advertisements** on television. Companies paid to put these **ads** on **search result pages** to advertise their company or product. Often these links do not bring me to any useful information because they are trying to get me buy something or sign up for something, so I usually skip over them. Sometimes these types of links will have the word **Ad** by them and other times these types of links will have the word **Sponsored** by them.*

Teacher Notes

Background Knowledge

For many teachers, noticing and naming features of a search results page is a new experience. While experience has led many of us to pointedly ignore advertisements and read through search result snippets, we do not know the names of these features. Here is a useful website that identifies and names each of these features. <http://anything-digital.com/blog/whats-in-a-serp-understanding-all-the-parts-of-a-search-result.html>

During Reading

Have students search for information using key words related to teacher or student generated questions. Allow students to explore the **search results page**, noting the **title, snippets, and advertising/sponsored** results. Encourage peer discussion of their findings.

Suggested Prompts

Model	Guide	Confirm
<ul style="list-style-type: none">• Notice the title (point), snippet (point), and URL (point) for this search result.• Here I notice the word Ad in front of this result. Remember that this means the link is an advertisement.	<ul style="list-style-type: none">• Think about the symbol that differentiates an ad from a regular search result.• Where can you find the snippet that gives you information about the website?• Where can you find the website address or URL for the search result?	<ul style="list-style-type: none">• You were able to identify which links were advertisement and those that were not.• You previewed the search result by reading the title and the snippet.

Discussion Points



Invite students to notice and describe features of the **search results page** with others. Encourage students to discuss the purpose of each of the features.

After Reading

Reflection

Invite students to share their overall understanding about the structure and features of a search results page.

Suggested Language: *What feature did you find most useful on the search results page? Why?*

Points to Remember

During the discussion, lead students to:

- Identify features of a **search results page** by name
- Explain how a user can tell the difference between an **advertisement** or **sponsored link** and those that are not

Locating Information: Understanding Search Engine Results

Overview: Often web searches result, in hundreds of thousands of links to related sources. Sorting through this list can be daunting, particularly for students, as readers constantly make decisions about what to read and identify the potential relevance of the content (Eagleton & Dobler, 2015). No matter which search engine you use, readers must identify the title and URL, then carefully read the snippet. The bold words in search engine results snippets are the web searchers key words, helping him/her further identify relevance of the link. In this lesson, students will extend their understanding of the features included on a search engine results page, learn how to better skim search results, and be able to better identify if the first item is best to answer their question.

Learning Targets:

- Students will understand the meaning of bold-faced terms on the search results page.
- Students will understand how to skim the results before reading more narrowly.
- Students will be able to identify if the first item is best to answer their question.

Standards:

- ISTE NETS-S 3.b Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media
- ISTE NETS-S 3.c Evaluate and select information sources and digital tools based on the appropriateness to specific tasks
- LAFS.4.RI.3.7 Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive
- LAFS.5.RI.3.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

Extensions/Scaffolds:

- Repeat this lesson with student-generated key words.
- Repeat this lesson, noticing the features of different search engines.
- Extend the lesson by comparing and contrasting features of different search engines and their results pages.

Key Vocabulary:

Search results page

Search results

Title

Snippet

URL

Advertising/Sponsored Links

Bold words

Snippet

Before Reading

Introduction or Review

1. Project and show students the results of a search from a teacher generated question and key words. Review with students the basic structure of the **search results page**, including where to find the **title**, **snippet**, and **URL** of each link.
2. Have students identify the **advertising/sponsored** links on the **search results page** and explain how they can tell the difference between these links and other **search result** links.
3. Tell students that search engines cannot truly comprehend the key words that you enter like a person can. Therefore, search engines work by matching your key words to words that appear on webpages across the Internet. This is why it is important to closely examine the results to determine which results might best answer your question.

Teaching Points

4. Refer students back to the search results page. Have student copy the key word search on their own devices. Ask students *Do you notice any words that are highlighted on the **search results page**?* Guide students to notice the words in **bold** print.
5. Ask students *Why might these words be highlighted?* Allow students to share their ideas. Guide students to identify that the **bold words** are the key words, or forms of the key words, used in the search.
6. Next, have students look at the **search results**, noting the **bold words**, to hypothesize which link might best answer their question.
7. After a brief discussion, look at the first **search result** (not an **advertising link**). Examine whether or not the first result **snippet** provides insight into answers for the question. Discuss. Then look at a link further down the list (be sure to scroll down a bit past the first few results). Examine whether this link **snippet** provides

Teacher Notes

Misconception Alert!

Students may believe that the first link that comes up in a search results list is the most related to their search. While most web searchers do click on of the first five results, it is often advantageous to skim the entire search results page before clicking that first link.

insight into answers for the question. Discuss. Ask students to think about which link they would choose and justify why.

8. Tell students that the first result may or may not be the best to answer their questions. Therefore, it is always wise to look further down the list for more relevant results.

During Reading

Have students search for information to a single teacher generated question. Have students examine the search results page and discuss which link they would choose to follow next and explain why.

Suggested Prompts

Model	Guide	Confirm
<ul style="list-style-type: none"> Look at all of the words that are in bold print. Notice that these are the same words as your key words or a form of your key words. In the first result, I see that it might lead to answer to this part of the question. . . , but not this part. If I look further down the list of search results, I think this snippet is more 	<ul style="list-style-type: none"> How do you know that the result is related to your search key words? Which search results do you think is most likely to answer the question? Look at the bolded words to see how similar the result is to your key words. 	<ul style="list-style-type: none"> I like how you pay attention to the bold words to see if the result is related to your key words. You looked down the list to see if other search results were more relevant. Great work!

relevant to the
question because . . .

Discussion Points



Invite students to discuss and debate their choices which links are most relevant to the question.

After Reading

Reflection

Invite students to share the features of the search engine results that helped them choose which link to visit first. Allow students to discuss how the **bold words** helped them make these decisions.

Suggested Language: *What features of the search results page did you find most helpful when choosing which line to visit first? Did you choose the first link? Why or why not?*

Points to Remember

During the discussion, lead students to:

- Identify the purpose of the bold words
- Share strategies for skimming search results
- Understand that the first link may not always be the best link to answer their question

Teaching Tip

Often web users come up with their own strategies for identifying relevant sources to answer their question. If a student utilizes a strategy that is not highlighted in this curriculum, allow him/her to share the strategy with others. Encourage other students to try out the strategy and determine how well it works for them.

APPENDIX D
EXPERT PANEL REVIEW MATERIALS

Initial Contact Email

Hello,

I hope this email finds you well. As part of my dissertation, I am designing an educative curriculum that introduces online research and comprehension skills to upper elementary students within a guided reading context. The completed curriculum will provide teachers with guided reading lessons that teach students these skills and simultaneously support teachers' knowledge of technology, online research and comprehension skills and strategies, and pedagogical decision-making skills when teaching these lessons.

Currently, I have designed seven lessons and am seeking feedback from experts like you on the framework of the lessons and supports provided within those lessons. Therefore, I am contacting you to see if you would be willing to review these lessons and provide feedback that will guide the development of future lessons.

Please let me know if you are willing to participate in this expert panel review by responding to this email. Thank you for your consideration.

Many thanks,

Jennifer Van Allen

Expert Panel Review Guidelines

Dear Expert Panel Review Member,

Thank you for agreeing to participate in the review of this curriculum. Your expertise is greatly appreciated and will impact the design of this curriculum significantly. The information that follows will provide an overview of the project and specific as you review the lessons.

Purpose: The purpose of the curriculum is to provide upper elementary students with an introduction to online research and comprehension skills within the supportive context of the guided reading framework. However, many of these skills and strategies are unfamiliar to teachers as well. Therefore, this curriculum has the dual purpose of helping teachers understand online research and comprehension skills and support teachers in making instructional decisions as they implement the curriculum. The curriculum is not intended to build teacher knowledge of the guided reading framework.

Description: These sampling of lessons from the curriculum were created based on a modified version of Fountas and Pinnell's guided reading framework. Three components of online research and comprehension skills are addressed within these seven lessons: web-searching basics; identifying a question/problem; locating information. You will notice that the lessons are categorized within each of these components. Each section starts with an if-then chart. The curriculum is not designed to be used in linear order. Rather, the if-then chart is meant to help teachers choose the lesson that a particular group of students is ready for based on the skills they currently have. Please note that more lessons will be added to these particular sections as well in the completed curriculum.

What to Review: Since the curriculum is still in development, I am seeking specific feedback that will help me to better meet the needs of students and teachers in future lessons and improve upon the current lessons. Attached, I have created a table with guiding questions for you to think about as you review these lessons. You may simply type your responses into the table and send it back. Please try to include specifics when possible.

Again, I thank you greatly for your expert opinion and support on this project. **Please try to complete your review by March 27, 2016.** If you have any questions at all during this process, please feel free to call me at 863-521-6577 or email me at Jennifer.vanallen@knights.ucf.edu or Jennifer.vanallen@ocps.net.

Best,

Jennifer Van Allen

Expert Panel Review Protocol

Guiding Questions	Reviewer's Responses
How well do these lessons support teachers' knowledge of online research and comprehension skills? Please explain what elements you find particularly helpful and/or unnecessary.	
How well do these lessons support teachers' instructional decisions when teaching these skills? Please explain what elements you find particularly helpful and/or unnecessary.	
What other knowledge and/or skills that are not included may teachers need to implement these lessons?	
How well do these lessons support students' development of online research and comprehension skills? Does the framework utilized support students as they develop these skills? Please provide a rationale for your response.	
How easy are the lessons to navigate? What layout features do you find helpful and/or distracting? Please explain.	
What do you feel are the strengths of these lessons?	
What do you feel could be improved in these lessons?	
Additional Comments/Feedback	
Do I have your permission to use your feedback in my dissertation? If so, would you prefer that I use a pseudonym if I reference your feedback specifically?	

Expert Panel Review Responses

Guiding Questions	Reviewer's Responses
How well do these lessons support teachers' knowledge of online research and comprehension skills? Please explain what elements you find particularly helpful and/or unnecessary.	I find the lessons give teacher just the right amount of support where they are not insulting to those who are tech savvy, yet are simple and easy to follow for those who are not as comfortable with technology. The lessons also give a lot of background knowledge that is helpful in the teaching tips and misconceptions alert.
How well do these lessons support teachers' instructional decisions when teaching these skills? Please explain what elements you find particularly helpful and/or unnecessary.	I think the If/Then chart at the beginning is a great starting point for teachers. It helps them find the sweet spot for where their lessons should begin. It is also a great tool to backtrack in lessons if they begin and find that the students weren't where they thought they were in the familiarity of web-based research.
What other knowledge and/or skills that are not included may teachers need to implement these lessons?	
How well do these lessons support students' development of online research and comprehension skills? Does the framework utilized support students as they develop these skills? Please provide a rationale for your response.	The first lesson is strong and a must for kids. In my own experience in the classroom, students do not know the difference between the search toolbar and the address bar. This is a skill that needs to be taught and is a great first lesson.
How easy are the lessons to navigate? What layout features do you find helpful and/or distracting? Please explain.	The plans are well organized and setup to follow step by step. The Teaching Tips are great information that will be helpful to teachers in understanding the technical side of the lessons. At my first glance at the lesson plans, I did not pay much attention to these tips with them being on the side with teacher notes. I think of teacher notes as a place for me to write down notes that I personally have for the lesson.
What do you feel are the strengths of these lessons?	The lessons are very detailed and thought through. I feel that you have not left a stone unturned when planning out the lessons.
What do you feel could be improved in these lessons?	I honestly cannot think of a way to improve these lessons.

Additional Comments/Feedback	<p>Great job! The plans are very thought out and detailed. They are simple to follow and give good examples of how to model to reach the desired effect.</p> <p>The misconception alert on pg. 17 is not showing the whole box so some of the text is cut off.</p> <p>The hyperlink on pg. 25 in the background knowledge box is also cutoff.</p>
Do I have your permission to use your feedback in my dissertation? If so, would you prefer that I use a pseudonym if I reference your feedback specifically?	Yes

Guiding Questions	Reviewer's Responses
How well do these lessons support teachers' knowledge of online research and comprehension skills? Please explain what elements you find particularly helpful and/or unnecessary.	The "If-Then" chart is helpful for not only students, but teachers who experience the same challenges. Before the teacher can teach these skills she will want to be comfortable with them herself. This is a good way to start.
How well do these lessons support teachers' instructional decisions when teaching these skills? Please explain what elements you find particularly helpful and/or unnecessary.	Teaching Tips are a plus. Misconception Alerts a plus. Keyword search lesson a plus.
What other knowledge and/or skills that are not included may teachers need to implement these lessons?	
How well do these lessons support students' development of online research and comprehension skills? Does the framework utilized support students as they develop these skills? Please provide a rationale for your response.	Is the target student in elementary? These could be helpful with secondary students as well but examples may need to be adjusted for that student.
How easy are the lessons to navigate? What layout features do you find helpful and/or distracting? Please explain.	An index & hyperlinks to parts of the lessons could be helpful when navigating.

What do you feel are the strengths of these lessons?	The lessons don't assume anything. Even though students may have already conducted their own searches, they may have missed critical procedures and strategies. These lessons provide a needed foundation for successful use of internet resources. We may have learned a lot of things in a catch as catch can method, but lessons such as these will ensure that there are fewer holes in the important foundation of digital skills.
What do you feel could be improved in these lessons?	Screen shots & screen captures that model the steps being taught. Teaching Tips & Background Knowledge boxes provide things to look out for – this is good. While they include some troubleshooting tips, would it be helpful to have a separate text box labeled “Troubleshooting” with just troubleshooting tips? Once a user gains confidence about solving low level issues, their productivity can increase. Since this is a digital lesson & students are working with devices it would be possible for the teacher to use digital presentation tool rather than just poster paper & markers. Would it be possible to provide the template for the discussion questions to be in slides/PPT/or SMART tools?
Additional Comments/Feedback	I did a little spell checking & indicated typos on the lesson plans – I'm not the best at this, but hope it is helpful.
Do I have your permission to use your feedback in my dissertation? If so, would you prefer that I use a pseudonym if I reference your feedback specifically?	Yes, you may use my feedback and my name. (Although I don't think my name will persuade anyone – they will scratch their head and wonder “Who is she?”)

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