2022

Middle School Teachers' Experiences Using Internet-Based Technology in Literacy Instruction

Shelly Butler
Walden University

Walden University

College of Education

This is to certify that the doctoral study by

Shelly Ann Butler

has been found to be complete and satisfactory in all respects,
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Review Committee
Dr. Ellen Scales, Committee Chairperson, Education Faculty
Dr. Billie Andersson, Committee Member, Education Faculty
Dr. Bonita Wilcox, University Reviewer, Education Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

Walden University
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Abstract

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EdS, Georgia Southern University, 2015

MA, Georgia Southwestern State University, 2013

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Project Study Submitted in Partial Fulfillment

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Abstract

Researchers found that the integration of internet technology into K–12 classrooms can improve student outcomes. Self-reported statements from 15 teachers and district survey results at the local setting, a rural school in a Southern state, indicated that sixth- through eighth-grade English Language Arts (ELA) teachers were not making effective use of research-supported internet resources in literacy instruction and assessment, and it is not known why. The purpose of this explanatory, qualitative case study, which included Knowles's theory of adult learning as a framework, was to understand how ELA teachers were using internet resources in literacy instruction. The research questions were used to inquire how middle school ELA teachers were using internet-based technology in the ELA classroom, which technologies they selected for integration into the ELA curriculum, and barriers they faced when they used internet-based technology in ELA instruction. Data were collected from semistructured interviews, document analysis, and the lived experiences and behaviors of 10 participants regarding their technology use in literacy instruction. All participants had over 5 years' experience teaching ELA and hesitated to use the internet in the literacy classroom. Qualitative coding and thematic analysis were used to identify the essential meaning of participants' lived experiences from interview and document data. Results indicated that participants most commonly used videos and Google Suite internet-based technology and that barriers to use included beliefs about technology and lack of knowledge and skill. A professional development project that provides technology education to literacy teachers to minimize literacy learning gaps and contribute to social change is recommended.

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Dedication

As I present this dissertation, I feel it is important to recognize the importance of those in my life who have provided influence and inspiration for me during my pursuit of a doctoral degree—I dedicate my work to them. My children have witnessed the amount of time and energy invested into pursuit of higher education and hopefully gained recognition of the importance of their own education as they grow.

Justin, thank you for allowing me to invest the time and work in order to make this degree possible. Our boys have always been our drive to push to the top, and I am forever thankful for our family. Dawson, Bryson, and Jameson—you are the reason I breathe and the reason I am where I am today. I pray you see how perseverance will get you a long way in life. Never give up on your dreams and always strive to be the best you can be. I love all of you with all my heart and bigger than the sky.

To my parents, I want to thank you for always encouraging me to reach my highest potential. Without your love and support, this degree would have not been possible. I love you and pray I always make you proud.

Acknowledgments

I would like to take a moment to say a special thank you to all who have helped me make this degree possible. This was definitely something I would not have been able to do completely on my own. Thank you to my husband, children, and parents who have been extremely patient and supportive through this whole process.

Thank you to Dr. Ellen Scales, who never ceases to amaze me with her guidance, endless words of encouragement, and support. She is a phenomenal chair and mentor. I am extremely thankful I was placed with her during this time in my life. You are the absolute best at what you do, and I pray you know that! Thank you to Dr. Andersson for your guidance through this process and your words of inspiration. You two make a remarkable team.

Table of Contents

List of Tables

List of Figures

Section 1: The Problem

The problem is that little was known about middle school English Language Arts (ELA) teachers' use of internet-based technology in the literacy classroom at the study site, a rural, Southern state school. Teachers at this school acknowledged that they were unsure and hesitant to use many of the popular digital tools for educators. Benchmark studies evaluating the acceptance and use of internet-based technology in middle school reading and writing classrooms found similar concerns as the teachers at the study site found (Beucher et al., 2019; Drossel et al., 2017; Lisenbee, 2016; Purcell et al., 2013; Safitry et al., 2015). Safitry et al. (2015) found that teachers did not implement the technology into pedagogy, but had a positive appreciation of the importance of technology application in classrooms. Similarly, Drossel et al. (2017) confirmed that teacher attitudes were critical for using technology in the classroom, but the teachers needed school support. Both researchers found that more research was called for to examine the teachers' acceptance and use of digital tools and integrated technology. Researchers continued to look at the acceptance and use of technology and tools and found similar concerns as the teachers at the previous study sites (Beucher et al., 2019; Lisenbee, 2016). Lisenbee (2016), one of the first to investigate the literacy classroom, explored how teachers were using technology to enhance literacy instruction. The researcher found that a paradigm shift was needed to support students and teachers in the use of technology for teaching and learning.

Lisenbee (2016) and Mundy et al. (2012) asserted that incorporating technology into learning settings has the potential to improve learning outcomes and instructional

methods in literacy instruction, but that additional research is needed to understand why a practice gap exists concerning teachers' implementation of best practices in technology use in the ELA classroom. In this study, to explain what barriers ELA teachers face to technology integration in literacy instruction, I explored how ELA teachers at the study site integrated internet-based technology and what barriers they faced when attempting to incorporate internet-based technology into literacy instruction.

According to Knowles (1978), by viewing teachers as adult, self-directed learners, ELA teacher preparation should account for a wide range of learner backgrounds and varied learner experience with computer and internet technologies. Knowles's theory of adult learning and Knowles's assumptions guided the development of this study. Knowles's assumption that adult learners are motivated to learn only what is relevant to their career and personal life applied to this study, in the sense that the study's problem and purpose focused on investigating how ELA teachers prepared to learn, develop motivation and readiness to learn, and apply what they learned about internet-based technology to the practice of literacy instruction. A gap in practice was found to reside between researchers who recommend the integration of technology into the ELA classrooms and the ELA teachers' hesitation to use technology. This research contributes to closing the gap between ELA teachers' use of internet technology and research best practice recommendations by uncovering what barriers to internet-based technology use ELA teachers may face, so that educators may better equip ELA teachers to use internet-based technology in literacy instruction.

The Local Problem

There is a need for additional research to explore how middle school ELA teachers use internet-based technology in literacy instruction to teach reading and writing (Drossel et al., 2017; Karafylli & Maligkoudi, 2021; Kostaris et al., 2017; Safitry et al., 2015; Walters & Wen, 2022). Further research is needed in this area to address the problem of ELA teachers' uneven use of internet-based technology at the local study site, coupled with a lack of understanding as to why ELA teachers were not evenly using technology in reading and writing instruction. Without sufficient understanding of why ELA teachers were inconsistently using internet-based technology in English instruction, educational stakeholders will face challenges in supporting English instruction through curriculum and policy development. Despite the availability of free internet-based technology use resources through internet sites and applications, the acceptance of internet-based technology has been unevenly integrated into literacy curriculum, standards, and instruction across the United States (Kostaris et al., 2017; Safitry et al., 2015), including in the local setting.

A gap in the level of technology use characterizes discrepancies in teaching modalities in literacy instruction (Howlett & Waemusa, 2018). Pedagogy must adjust to include the technology that will improve current pedagogical practices (Kostaris et al., 2017; Karafylli & Maligkoudi, 2021; Walters & Wen, 2022). ELA teachers at the rural, Southern state study site voiced their concerns about a discrepancy in internet-based technology use in literacy instruction. In personal communications, middle school teachers in the local setting expressed reluctance to incorporate internet technology

resources in literacy instruction. Teacher A indicated a reluctance to incorporate more technology use into current instructional practices and stated that she preferred to avoid using new internet technology sources. This teacher stated that she wanted to continue to prepare her students in the same way she always has and, for this reason, has refrained from using internet-based technology in literacy instruction. Similarly, Teacher B expressed hesitance to adopt internet technologies in literacy instruction. Teacher B also stated that she does not see the need to integrate internet-based technology into literacy instruction, as she believes that the way she currently teaches is satisfactory; therefore, she does not use internet-based technology in her literacy instruction currently. Teacher C said she felt extremely unfamiliar with the internet technologies and had not used them in class. Teacher C also stated that she has limited knowledge of technology use and therefore does not use it in literacy instruction.

The principal of the study site ran a report using Clever, an application that provides digital learning tools while also measuring the number of teachers logging into and using available digital and internet-based technology platforms in literacy instruction. The Clever report information was gathered in fulfillment of the school principal and board's ongoing school evaluation and monitoring of school performance and literacy instruction teaching practices. Information from the Clever report revealed that only 41% of the local study site's ELA teachers were using Accelerated Reader 360 before the study. Accelerated Reader 360 is a platform that can facilitate language instruction. The local study site's district is encouraged to use Accelerated Reader 360 as part of the district's improvement initiative to integrate more technology use into literacy

instruction, including language learning classrooms (Green, 2017). A discrepancy between the low use of Accelerated Reader 360 and district recommendations for best practice uses of technology was evidence of teacher reluctance to use available technology sources in literacy instruction.

Both Walker (2017) and DeKalb County School District (2018) provided additional evidence of teachers' reluctance and failure to use technology in literacy instruction, which indicates a need for increased technology use in ELA literacy instruction. The district survey, conducted by the district technology director and a district technology plan, indicated that over half of district K–12 teachers surveyed testified to being reluctant to integrate technology into their literacy instruction and interventions (Walker, 2017). DeKalb County School District's technology literacy planning document described teachers' technology use and comfort levels with internet-based technology use, noting that teachers at the local setting underuse technology in literacy instruction environments, according to national benchmarks, in which 77% of teachers use internet technology for instruction. A north Georgia superintendent outlined in the 2017 district report that continuing to integrate technology into instruction was an area of needed improvement (Green, 2017).

This evidence from the study's local setting, in conjunction with the aforementioned teacher comments, demonstrated the existence of a gap between the practice of technology integration at the local study site and best practices for technology use in literacy instruction (DeKalb County School District, 2018; Irby et al., 2018; Kostaris et al., 2017; Soebari & Aldridge, 2015; Strategic Action Subcommittee, 2018;

Zhang & Wu, 2019). Soebari and Aldridge (2015) explained that these best practices include using technology to facilitate literacy learning, such as the use of technology platforms that cater to the needs of diverse learning styles, including visual, auditory, and verbal. In this way, technology use in literacy instruction serves as a tool students use in the acquisition of information. Teachers use internet-based technology tools to present information to students of different learning styles in different ways more efficiently than teachers may otherwise be able to accommodate. The gap between these recommendations of technology use for learning acquisition and current local study site practices impacted the current teaching practice and efficacy at the local study site. The local issue connected to a broader issue of lacking technology integration in literacy instruction. Safitry et al. (2015) found that the teachers who fail to successfully implement technology into some literacy instruction environments lack applicable formal technology training, signifying a gap between practice, trained skill, and need.

Soebari and Aldridge (2015) argued that literacy teachers' ineffective use of internet-based technology tools is a widely recognized problem and cited over 20 recent studies documenting teachers' difficulties in following best practices in integrating internet tools in literacy instruction. Roblin et al. (2018) and Safitry et al. (2015) conducted research on teachers' resistance to internet-based technology integration and concluded that even though the availability of technology has significantly increased in schools in recent years, teachers continue to struggle with, and at times seem resistant to, integrating internet-based technology in literacy instruction practices. Voogt and McKenney (2017) argued that secondary teachers in different content areas, including

ELA, have difficulty in integrating technology into their instructional processes. Evidence from the local setting and from the literature (Roblin et al., 2018; Safitry et al., 2015; Voogt & McKenny, 2017) demonstrated the existence of a gap between ELA teacher instructional practice and researchers' recommendations (Soebari & Aldridge, 2015) regarding technology integration in literacy instruction and current teaching practice.

Rationale

The use of internet technology in literacy instruction has the potential to improve student outcomes (Elstad & Christophersen, 2017), but evidence in the local setting indicated that ELA teachers at the local study site were experiencing difficulties in using technology according to these research-indicated best practices—a practice gap that called for an investigation. Safitry et al. (2015) emphasized the importance of learning specifically about educators' experiences surrounding technology use in literacy instruction in order to identify barriers to best practice technology use and in order to subsequently understand what literacy instruction adaptations may be necessary to support educators' strategic use of internet-based technology in literacy instruction. In alignment with Safitry et al.'s statement, the purpose of this qualitative case study was to gain a clearer understanding of how ELA teachers at the study site used internet-based technology in literacy instruction, what technologies they were using, and what barriers ELA teachers experienced to using internet-based technology in literacy instruction. This purpose aligned with Drossel et al.'s (2017) assertion that it is not yet understood how some ELA teachers are using internet-based technology in literacy instruction.

Definition of Terms

Baby boomer: The generational cohort following and born after the silent generation and preceding Generation X. Baby boomers are referred to as those born between 1946 and 1966 (Drossel et al., 2017).

Barriers of technology integration: Obstacles teachers face to fully incorporating technology into literacy instruction. One major barrier is that teachers lack the needed support necessary for technology integration (Karafylli & Maligkoudi, 2021).

Common core state standards: High-quality academic standards put into place outlining what students should know at the commencement of each grade (Cydis, 2015).

Digital natives and immigrants: Millennials and Generation Z individuals who are fluent in technology use (Organization for Economic Cooperation and Development [OECD], 2019; Vogel, 2015). The term *digital natives* was originally coined by Prensky (2001) and used to describe those born into and following the widespread integration of computers and the internet into residential homes, as well as businesses. *Digital immigrants* refer to individuals who migrated from the primary use of pen and paper or typewriters to digital word processing programs (OECD, 2019; Prensky, 2001).

Facilitators of technology integration: Supportive elements that accommodate and assist teachers' use of internet-based technology in literacy instruction (Walters & Wen, 2022).

Generation X: The demographic population immediately following baby boomers and preceding Millennials, generally including individuals born between the mid-1960s and early 1980s (Drossel et al., 2017).

Generation Y: The demographic population immediately following Generation X, often referred to as Millennials or *echo boomers,* and refers to those born during the late 1980s and 1990s (Drossel et al., 2017).

Generation Z: The generational cohort following Millennials or those born between the mid-1990s and the early 2000s. Currently, Generation Z makes up 25% of the U.S. population. Generation Z is often referred to as digital natives (Drossel et al., 2017).

Internet-based: Any services or communications, in this study related to teaching and learning, on the internet, also known as the Web (Delgado et al., 2015; Zhang, 2020).

Literacy: Literacy includes reading, writing, listening, speaking, and critical thinking activities (International Literacy Association [ILA], 2019).

Literacy development: The process of expanding one's knowledge and skills related to reading and writing. This process is fundamental to achieving competence in every educational subject (Delgado et al., 2015; Zhang, 2020).

Middle school: The range of schooling including students between approximately the ages of 11 and 13 or between Grade 6 and Grade 9 (Byker et al., 2017).

Supports and tools: Supports and tools include staff development, literacy resources, and materials used to provide training, understanding, and insight about new literacy programs (Delgado, et al., 2015; Zhang, 2020).

Teacher perceptions: Teachers' views, attitudes about, beliefs toward, and opinions on integration technology in literacy (Byker et al., 2017).

Technology integration: Comprehensive incorporation of internet-based technology and apps into literacy instruction in order to improve teaching and learning for students and teachers and the inclusion of technology into curriculums, instructional practices, and assessment (National Center for Education Statistics [NCES], 2019).

Title I education initiatives: A federal program that works through individual state education agencies to provide financial assistance to local education agencies, as well as public schools, serving socioeconomically underprivileged children in an effort to help underprivileged children meet statewide academic achievement standards (U.S. Department of Education [DOE], 2017).

Significance of the Study

This study was significant because I sought to understand how ELA teachers were integrating internet-based technology in literacy instruction. The findings of my study exposed teachers' need for professional learning opportunities that could lead to the development of methods that encourage teachers and students to use internet-based technology in literacy classrooms on a more frequent basis and in a more impactful way. This insight may contribute to the development of professional training programs that improve ELA teachers' literacy instructional capacities. Professional development based on the findings of this study may contribute to improving literacy education, both locally and at the national level. This may aid educators in strategically overcoming barriers in order to enhance Title I educational initiatives, which work to alleviate poverty. Title I educational initiatives work to alleviate poverty by using educational improvements

targeting underprivileged children in order to expand children's academic and economic facilitators.

An understanding of how internet technology is used in ELA teachers' literacy instruction at the study site might help alleviate the local area's educational achievement gaps by increasing the instructional capacity of ELA teachers and thus the literacy skills of students—particularly students from socioeconomically disadvantaged backgrounds or students who experience developmental and learning difficulties (Escueta et al., 2017; McDaniels, 2018; NCES, 2019). Efforts to improve the literacy instruction of students from disadvantaged backgrounds may help reduce disparities that exist in the wider society between social classes, ethnic communities, and regional areas. Students supported by greater technology integration may be able to complete their K–12 curriculum in a way that leaves them more prepared to pursue higher education or employment. The general levels of literacy and education in the wider society may consequently increase, potentially contributing to a more competent workforce.

Overall, this study's results uncovered valuable information that could be used to impact ELA teachers at the local study site by informing educators of barriers ELA teachers currently face to using internet-based technology to its greatest instructional potential and thus taking steps to overcome those barriers so that ELA teachers are better prepared to effectively instruct in literacy instruction. The results of this research may also promote social change by generating a deeper understanding of how future literacy instruction may be improved using internet-based technology. Increased understanding, from this study's results, of how internet-based technology is being used can be used to

improve future literacy instruction and contribute to social change by closing technology-centered pedagogical and instructional gaps. Closing such gaps may alleviate education-based disparities in a rural, Southern school, thereby making an original contribution to improving the local economic and social environment. In closing this gap, this study is significant because the results may be incorporated into professional development programs to contribute to social change initiatives by increasing ELA teachers' reading and writing instructional skills so that teachers may advance in their professional positions. Thus, contributions toward increasing ELA teachers' reading and writing instruction skills may contribute to alleviating poverty in the local area. I analyzed the results of this study to identify themes related to internet-based technology use, as well as barriers that influence the use of technology in literacy instruction.

By clarifying how ELA teachers integrate internet technology in literacy instruction, I addressed the educational achievement gap experienced by students from low socioeconomic backgrounds by promoting increased technology use as a means of improving student outcomes. The failure to use internet-based technology in literacy instruction is common in school districts serving a population that experiences socioeconomic disparities, partially due to the lack of training received by teachers in these school districts, as compared to teachers in districts where these disparities do not exist (Soobin et al., 2015). Barbaro et al. (2016) supported the validity of this observation. Barbaro et al. identified a direct correlation between poverty experienced by students and the students' wider community, the level of academic training and professional experience possessed by students' teachers, and the use of internet-based

technology in students' literacy instruction. Thus, failure to use internet-based technology effectively in literacy instruction can have a major impact on student outcomes, further exacerbating the gap in student achievement affected also by socioeconomic status (Barbaro et al., 2016; Soobin et al., 2015). Scherer et al. (2018) proposed that a frequently encountered difficulty within the context of such educational environments is the failure of teachers to appreciate the value of internet-based technology in literacy instruction. Chun et al. (2016) found that internet-based technologies may help improve the efficacy of language learning and teaching techniques. ELA teacher motivation is an essential aspect of implementing effective literacy instruction (Scherer et al., 2018).

Research Questions

In this study, I explored how ELA teachers at the study site used internet-based technology applications in literacy instruction and the barriers to internet-based technology use ELA teachers faced through three research questions. I developed these research questions based on the theoretical assumption that adult learners are most interested in acquiring knowledge in areas that have direct relevance to their careers and personal lives (see Knowles, 1978). The research questions were as follows:

Research Question 1 (RQ1): How are ELA teachers using internet-based technology in the ELA classroom?

Research Question 2 (RQ2): Which internet-based technologies do ELA teachers select for integration into the ELA curriculum?

Research Question 3 (RQ3): What are the barriers ELA teachers face when they use internet-based technology and integrate internet-based technology into ELA instruction?

Review of the Literature

Conceptual Framework

Because teachers are adult learners and use a different learning style than the traditional pedagogy in which a teacher passes information to children (Andersen & Andersen, 2017), the primary conceptual framework I used to guide this study was Knowles's (1978) theory of adult learning/andragogy. Knowles defined andragogy as the art and science of adult learning and identified five characteristics of adult learners: self-concept, experience, readiness to learn, orientation to learning, and motivation to learn. Because adults are self-directed, Knowles argued that instruction should allow for self-discovery, while still offering guidance in response to mistakes. Adding insight to researchers' understanding of adult learners' learning styles in the educational setting, Kearsley (2010) investigated ELA teachers' beliefs and attitudes about the adoption of technology in an educational setting, from both adult learners and educators. With specific regard to supporting educators' use of instructional technology in literacy instruction, Kearsley identified Knowles's principle that is most appropriate to this study: Instruction should account for a wide range of learner backgrounds, and thus learning materials should allow for a variety of experience.

Knowles's (1978) principles related to this study in the sense that my purpose focused on investigating how ELA teachers prepared to learn, developed motivation and

readiness to learn, and applied what they learned about internet-based technology to the practice of literacy instruction. Knowles's theory relates to how adult learners develop motivation and personal connections with new concepts and ideas. According to Kearsley (2010), teachers' experiences are shaped by their interests and by the relevance they perceive relates to different applications. Learning about ELA teachers' experiences in using technology tools in literacy instruction relates to the andragogy theory by focusing on the connection between what ELA teachers perceive to be useful, what they use in literacy instruction, and how they use it (Palis & Quiros, 2014; Taylor & Hamdy, 2013). In this study, I connected to Knowles's theory by clarifying, exploring, and explaining the lived experiences and behaviors of participants' technology use in literacy instruction.

Understanding the barriers that influence ELA teachers' use of technology tools and resources in literacy instruction related to the andragogy theory by focusing on ELA teacher learning as problem-centered rather than content-oriented (Gewurtz et al., 2016). As Kearsley (2010) found, alongside advancing technology, there is a continuing need to re-educate and provide continuing education in academic, business, and industrial environments. Kearsley argued that when teachers are presented with new technology to incorporate in their literacy instruction, it is essential to gain a stronger understanding of their learning approach related to using these new resources. Knowles's (1978) adult learning theory principles related to the relevancy, motivation of learning, and incorporation of new ideas influenced this study's data analysis by assuming that ELA

teachers incorporated that which they deemed and believed useful into lesson planning, teaching, and learning.

Review of the Broader Problem

In the review of literature, I establish the foundation for this project study by identifying and connecting the broader problem of the uneven integration of internet-based technology into literacy instruction (despite the presence of technology resources) with Knowles's theory of learning (Brocket & Hiemstra, 2018; Ciocca & Huyler, 2016; Escueta et al., 2017; Knowles, 1978). In this section, I discuss the study's conceptual framework and the background, use, and acceptance of technology, including the internet-based literacy sites and apps, in the United States. I also review what is currently known about pre- and in-service teachers' beliefs, attitudes, and perceptions about internet-based technology use in literacy instruction. I collected the components within the literature review from Walden textbooks, peer-reviewed articles, and educational journals accessed through the Walden library. I used the following search terms through Walden's database, Google Scholar, JSTOR, and the Cochrane database: *internet-based, technology, literacy, instruction, classrooms, common core state standards, barriers, facilitators, obstacles, supports,* and *teacher perceptions.*

In the discussion of literature herein, I synthesize the findings of recent research regarding the role of technology integration in student learning, what is known about ELA teachers' perceptions of technology integration in literacy instruction, trends in technology use, teachers' comfort levels with technology use, and known barriers to integrating technology in literacy instruction teachers experience. The topics included in

this review align with this study's conceptual framework of Knowles's theory of adult learning/andragogy previously described (Brocket & Hiemstra, 2018; Knowles, 1978), which posits that adult learners choose to learn concepts most relevant to their everyday lives. Examining existing literature related to educators' use of technology in literacy instruction, I illuminated and clarified the context surrounding the current gap in understanding related to the uneven integration of technology into middle school literacy instruction at the study site, in comparison to research best practices.

General Gap in Technology Acceptance and Use

In this section, I discuss the known generation gap characterizing discrepancies in technology use and establish a foundational understanding of the assumption that generational differences are associated with differences in teacher technology use. I did not formulate the study's research questions to address generational discrepancies. However, reviewing the research explaining this assumption helps to understand the context of this study and potential research themes that arose from the findings. The designation of generation contributed to the purposeful sampling of participants, who are alike in the designation.

Despite the availability of free technology learning resources for literacy instruction, the use of technology is unevenly integrated into literacy instruction across the United States (Brown, 2013; Lisenbee, 2016; Venkatesh et al., 2016). The inconsistent use of technology in elementary literacy instruction is influenced in large part by the pace at which school districts adopt and integrate new technologies into teaching practices. Researchers have suggested that many discrepancies in the use of and

comfort levels with literacy instruction technology integration could be attributed to a generation gap (Levy & Eini, 2017; Riegel & Mete, 2018). A gap in technology use by Generation Z individuals, many of whom are students and are considered technological natives (Levy & Eini, 2017; Riegel & Mete, 2018), in contrast to Generation X and baby boomer instructors, who may lack technology literacy to a greater degree than digital natives, may be due in part to pre-Generation Z individuals not being born into a context inundated with mainstream technology (Berman & Hassel, 2014; Lisenbee, 2016). This generation gap and technological literacy gap are speculated to create a communication gap in how Generation X and baby boomers instruct. Subsequently, this gap creates barriers to student literacy learning (Mundy et al., 2012; Venkatesh et al., 2016).

In a review of the benefits of educational-based technology in literacy instruction upon literacy instructional efficacy and student outcomes, Levy and Eini (2017) suggested the attitudes of many Generation X individuals and baby boomers surrounding the use of technology in literacy instruction will require a cultural change in mindset. The cultural change in mindset will need to be among all educators. A rearrangement of priorities for administrators will be required to facilitate more effective instructional practices (Levy & Eini, 2017).

Rationale for a General Gap Discussion

Discussion of the generation gap in today's educational environment is useful due to the potential of the generation gap (primarily between Generations Y and X, and baby boomers and the silent generation) as a predominant, likely factor influencing the uneven integration of technology in literacy education and therefore relevant in contextualizing

this study. For instance, Boehncke (2018) discussed digital trends in technology use among teachers and students, noting that conservative attitudes among teachers, and in correlation with increasing teacher age, have been pinpointed as a barrier to effective technology integration in a variety of classrooms, including literacy learning environments. Researchers also speculate this issue to become increasingly resolved as digital natives enter the workforce; yet, this remains speculation, since it is not yet understood fully why nor what contributes to such uneven technology use—or more specifically, what factors contribute to conservative attitudes towards and lack of use of technology. One such factor is speculated to be generational differences due to generationally-based attitudes and beliefs (Boehncke, 2018; Drago, 2006).

Technology use among digital natives has been found to be more prevalent than among baby boomers and the silent generation, and barriers to technology use are less prevalent among younger Generations Y and Z (Boehncke, 2018). Common barriers to technology use found among all generations include categories such as risk-taking, self-efficacy, access to technology, and tech support, but these barriers tend to be more prevalent among baby boomers rather than Generations Y and Z, while research indicates Generations Y and Z are often more apt and motivated to learn technology and overcome these barriers than the silent generation (Boehncke, 2018; Ciocca, 2016). Increased technology use is also found to be positively correlated with increased computer skills, self-efficacy, support for users, and access to technology resources and help, especially among Generations Y and Z (Boehncke, 2018; Webber & McKinney, 2016). In addition to Generations Y and Z, baby boomers, born between 1946 and 1964, have been coined

as *lifelong learners*, also seldom apprehensive to learning new technology, but less intuitively inclined to use new technological interfaces than members of Generations Y and Z (Boehncke, 2018; Ciocca, 2014; Webber & McKinney, 2016). Specifically, Ciocca (2014) described baby boomers as foreign to technology use. Generation Xers often exhibit trends in technology use and comfort level like those of Generations Y and Z. Thus, baby boomers' lack of use of technology in instructional environments in comparison to younger generations, despite their willingness to learn, may be related to their lack of intuitive skills around technology.

Character traits of baby boomers include those such as skeptics, workaholics, reformers, questioners of authority, and continual learners. Furthermore, baby boomers are known as the first generational cohort within the United States who have exhibited a continuance toward lifelong learning, even throughout their changing life cycles. This implies that although baby boomers may be reluctant to use technology, they may be easily trained in various classroom technologies, if provided proper support and instruction (Ciocca, 2014). Even though baby boomers are generally foreigners to technology, Ciocca (2014) also noted that research generally debunks the common myth that baby boomers lack understanding of technology altogether or fail to use technology effectively when provided with technical support and resources. One potential reason for a lesser use, adaptation to, or learning of the use of technology trends among baby boomers, specifically those in instructional settings, is speculated to be due to boomers' values and perspectives toward technology being formed before its insurgence. In other words, Ciocca explained that whereas younger digital natives allow technology to shape

their everyday existence, boomers more commonly use technology to create a lifestyle they desire. Baby boomers value personal and physical, face-to-face contact above technological interaction (Ciocca, 2014); therefore, this value distinguish may aid in explaining gravitation towards hands-on, physical, and tangible learning tools in literacy instruction, as opposed to digital tools.

Though Millennials, also known as Generation Y, are often considered digital natives, research also indicates Millennials have kinesthetic and visual learning style preferences (Boehncke, 2018; Webber & McKinney, 2016). Such tendencies and learning styles may be facilitated by the visual functions of digital technology tools and/or hindered by the limitations of technology, in comparison to hands-on instructional methods that may be more tailored to kinesthetic learning. For this reason, Millennial literacy instructors may gravitate towards both digital and hands-on learning tools to facilitate instruction, regardless of the classroom demographics. Millennials generally exhibit more positive attitudes toward technology than baby boomers, therefore, may be more apt than baby boomers to integrate technology use into classroom instruction (Webber & McKinney, 2016),

Webber and McKinney (2016) mapped key approaches of literacy teachers that corresponded to the quality of learning (instruction) delivered, as measured through student performance, using the teaching and learning environment model. Approaches to instruction were mapped according to pedagogic beliefs, lesson planning according to outcomes, and instructional tools and techniques, the last of which included technology tool integration. Webber and McKinney uncovered discrepancies in teacher beliefs about

the instructional quality of face-to-face versus distance learning, which could have contributed to teachers' likelihood to integrate technology tools into instruction. This suggests that the integration of technology in instructional environments by members of the Millennial generation may be influenced by pedagogical beliefs of the quality of learning resulting from the use of digital technologies in instruction.

A discussion of the generational differences interwoven with technology use discrepancies in instruction is also relevant to this study in the sense that understanding potential generational differences of perspectives towards, and use of, technology assists in informing how teachers are using technology and the rationale for such technology use. Understanding this generational context characterized by technology evolving at a more rapid pace than human generations contextualizes the findings of this study in terms of their integration and significance into broader educational contexts. Such contextualization may also suggest what technologies may be preferred in correspondence with various generations and the trends, behaviors, and corresponding values of that generation.

Generational trends, behaviors, and values are theoretically described by the Strauss-Howe generational theory. The generational theory describes recurring generational cycles in global and American history by describing events as being associated with generation-based archetypes. In today's instructional environments, clarification of key generations is essential in operationalizing generation-characterizing terms. Each generation is associated with a 20- to 25-year era, characterized by its own social, economic, and political climate. Each era is part of a broader saeculum or human

lifespan of 80 to 90 years (Drago, 2006; Oh & Reeves, 2013). Each lifespan is characterized by peaks and lows concerning succeeding archetypes that thrive upon autonomy and individualism, lending to political turmoil, increasing the likelihood of a political crisis before the cycle continues. Within this broader context, generational groupings are characterized by key life cycle phases of youth, rising to adulthood, mid-life, and seniority. Key aspects of each phase shape one's worldview, values, and therefore preferences or behaviors (Bristow et al., 2020; Drago, 2006; Oh & Reeves, 2013).

With this understanding of generational theory, it can be speculated that key aspects of the political, social, and environmental context surrounding different generations influence that generation's perspectives and behaviors exhibited in personal and career activities, including educational instruction. For instance, a baby boomer, shaped by the values of face-to-face social interaction, rather than by the importance of digital technologies to assist basic functions of everyday life, may be less inclined to place expectational value upon using technology for instruction. Moreover, seeing language and learning as fundamentally social behaviors, a baby boomer may value non-digital instructional methods above instructional methods that may seem to conflict generational values, social norms, and beliefs about learning and interaction. Hence, understanding this generational context and the way generational values may influence technology use, preference, and barriers anchors this study's discussion of the findings within the literature and practices within social settings, thus making the findings more useful and relatable to educators (Bristow et al., 2020; Oh & Reeves, 2013).

Finally, clarification of key generations in today's instructional environments is essential in operationalizing generation-characterizing terms. Traditionalists are those born before 1945 and are seldom found in today's teaching environment due to their seniority and the fact that most traditionalists, at this point, have or are passing on. Baby boomers are defined as those born between 1946 and 1964. Generation Xers are characterized as those born between 1965 and 1980, while Millennials are those born between 1981 and 2000. Generation Z are those born after 2000 and are just entering the workforce. Most teachers found in today's literacy classrooms are Generation Xers and Millennials; baby boomers constitute a minority (Oh & Reeves, 2013).

Gap Between ELA Teacher Technology Use and Best Practice Recommendations

Practice gaps in ELA teachers' use of technology in instruction reveal ineffective technology integration (Kostaris et al., 2017; Safitry et al., 2015). As new technologies advance, a wealth of opportunities exists to incorporate digital technology into instructional practices for the benefit of student literacy learning and effective teaching (Lisenbee, 2016; Mundy et al., 2012). Hence, best practice recommendations are evolving to incorporate more digital technology use (Lisenbee, 2016; Mundy et al., 2012). However, a gap exists between teachers' actual use of such technologies and these recommendations (Kostaris et al., 2017; Safitry et al., 2015).

One systematic review found that over 20 studies identified teachers' ineffective use of internet-based technology tools in literacy instruction as a significant problem in education (Soebari & Aldridge, 2015). Roblin et al. (2018) and Safitry et al. (2015) researched teachers' resistance to internet-based technology integration and concluded

that even though many technological tools are now readily available in most schools, many literacy and ELA teachers struggle to successfully integrate technology-based literacy and instructional practices into literacy instruction settings. For instance, Google Docs and related internet-based platforms that can make editing and sharing writing-based instructional feedback on student papers more efficient are not used to a significant degree, often due to teachers' discomfort and lack of familiarity with such platforms (Roblin et al., 2018; Safitry et al., 2015). Many teachers remain and attest to being comfortable with commenting on student writing by hand or via email, rather than using cloud-based platforms. Voogt and McKenney (2017) presented research aligning with Roblin et al.'s findings that argued that secondary teachers in different content areas, including ELA, have difficulty in integrating technology into their instructional processes.

Technology Integration's Influence on Students' Literacy Development

Today's rapidly evolving digital technology tools have a wealth of uses, applications, and potential benefits to literacy learning and teachers' instructional efficacy (Barbaro et al., 2016; Ciampa, 2017; Delgado et al., 2015; Escueta et al., 2017; Greenier, 2018; Lisenbee, 2016; Mundy et al., 2012). The digital revolution has changed the way people obtain information. Many digital tools have made teaching aids and resources more accessible online for ELA teachers (Delgado et al., 2015). Constant connectivity to limitless information provides the capacity for literacy learners of all ages to self-direct their own education and focus on learning specific content in an individualized, highly relevant fashion (Barbaro et al., 2016).

The 21st century education outcomes, as expressed by Al Kandari and Al Qattan (2020), prioritize technology integration and the development of students' critical thinking and problem-solving skills in literacy learning. Multiple scholars have expounded upon technology's potential to improve student literacy learning outcomes (Barbaro et al., 2016; Escueta et al., 2017; McKnight et al., 2016; Owen, 2014). Technology can assist classrooms of diverse learning styles and minimize teacher pressure and workload. For example, Barbaro et al. (2016) argued that technology has the power to transform how students learn language and literacy content because technology offers diverse learners a way to access literacy supports independently within a curriculum and at the exact moment needed, without having to wait for teacher intervention or help, which may take some time in large classrooms of diverse learners. Safitry et al. (2015) stated that the integration of educational technology can improve the quality of literacy education by providing curricular support in previously identified difficult subject areas.

Some research indicates that incorporating technology into literacy instruction improves student outcomes by improving teacher pedagogical performance (Stanford Education, 2014). Technological advances, such as assessment software, improve instruction because these advances allow teachers to continuously evaluate student learning and adapt literacy instruction accordingly, which improves students' understanding of language concepts—thereby improving outcomes (Ciampa, 2017). Student outcomes are also often improved via technology incorporation because some internet technology enables immediate student feedback, which allows literacy teachers

to tailor and direct focus towards literacy concepts on an individualized basis so that students can master specific learning objectives (Barbaro et al., 2015; Ciampa, 2017; Stanford Education, 2014). Immediate feedback also allows teachers to receive a more detailed analysis of their students' understanding of subject matter and literacy processes (Ciampa, 2017; Stanford Education, 2014).

Technology applications can be most effective for literacy if they are well-aligned with an underlying pedagogic intervention. Student exposure to technology can contribute to the literacy skills needed for future academic and professional success (Piper et al., 2016). With rapid advances in technology and its ubiquity in the everyday lives of people all over the world, the notion of a literate populace has expanded to include the skills and abilities that people need to function meaningfully and effectively in an increasingly technological world (National Council of Teachers of English, 2019; Piper et al., 2016).

Teacher attitudes seem to have a strong correlation with and possible influence on teachers' comfort of use and use of technology in literacy instruction (Barbaro et al 2016; Scherer et al., 2018; Seraji et al., 2017). Seraji et al. (2017) found strong relationships between teachers' attitudes concerning the importance of using technology tools in instruction and their likelihood of implanting technology-based resources in literacy instruction. This connection between teachers' perceptions of the importance of technology use and use itself aligns with Knowles's (1978) framework positing that adult learners learn and implement in professional spaces only what they perceive to be useful for their careers. Teachers who viewed learning as information accumulation more often

perceive instruction as information transactions and tended to adhere to traditional modes of instruction incorporating less technology; whereas, teachers who understood learning as conceptualization and perception transformation viewed instruction as facilitating this perceptual transformation (Seraji et al., 2017). Seraji et al.'s findings suggest teachers who view learning as conceptualization may be more likely to incorporate technology as a facilitator of that transformation due to their own willingness to learn and transform their perceptions. Similarly, in another study examining how teachers' attitudes influence technology use, Barbaro et al. (2016) found that over half of participants believed the use of technology in literacy instruction is effective in fulfilling student needs, suggesting that those who do not believe it to be effective may not be using technology to its full capacity (Seraji et al., 2017).

Similarly, a significant relationship seems to exist between preservice teachers' attitudes towards technology and teachers' willingness to incorporate technology into literary and non-literary instruction, based on study findings indicating positive correlations between teacher attitudes about the implementation of technology in literacy instruction and self-belief regarding their technological, pedagogical, and content knowledge skills (TPACK; Scherer et al., 2018). In this particular study, as teachers' TPACK increased, so did their attitude toward the implementation of technology inside literacy instruction (Scherer et al., 2018).

Because teachers are responsible for guiding today's students towards success in the context of the technologically-saturated world, because effective literacy learning is an imperative component of student success, and because technology has the potential to

improve literacy instruction, addressing teachers' actual and perceived barriers to implementation of literacy instruction technology is necessary (Carver & Todd, 2016; Gümüşoğlu & Akay, 2017; Scherer et al., 2018). Based on Gümüşoğlu and Akay's (2017) theory of unified technology use in literacy instruction, it is presumed that successful literacy instruction in today's technologically-saturated classroom requires consistent technology integration. The pattern of this uneven use of internet-based technology directly relates to and supports Knowles's (1978) theoretical assumption that adults are most interested in acquiring knowledge on subjects only relevant to their own lives.

Level of Teacher Comfort with Technology Use

Similar to how teachers' perceptions of technology are connected to technology use, teachers' comfort levels with using technology are also connected to technology use and implementation in the classroom. Studies exploring the relationship between teachers' attitudes and comfort, or ease of use, are beginning to be conducted internationally (Bill and Melinda Gates Foundation, 2015; Chaaban & Moloney, 2016). Due to the rise of globalization, basing benchmarks upon international standards often more easily facilitates achieving a common goal. One example of the relationship between attitudes and technology use can be seen by exploring Lebanese teachers' perceptions of technology use and what perceptual factors relate to these teachers' use of technology in the classroom. Similar positive correlations were found to those identified within Scherer et al.'s (2018) study. Most of the Lebanese teacher population indicated that they did not feel adequately trained in how to incorporate technology into literacy

instruction, and most expressed a belief that technology could improve instruction (Chaaban & Moloney, 2016), indicating that the barrier to use was related to competence and belief in competence rather than a negative perception of technology itself. This is a relevant consideration in light of future research implications, as many socioeconomically disadvantaged school districts in the United States share some similar challenges as school districts in less developed nations. Furthermore, this echoes Knowles's theory postulating that experience provides facilitators for learning.

In addition to skill or competence, the perception of lacking proper infrastructure can also be a barrier to use. Nearly a third of teachers evaluated in one study reported that a lack of proper technology infrastructure inhibited their use of technology (Barbaro et al., 2016). This finding aligns with a large study that indicated only 28% of U.S. classrooms do not incorporate technology, and 69% of teachers do not fully integrate technology into instruction, relying instead on traditional methods of instruction (Bill and Melinda Gates Foundation, 2015).

Throughout research, self-efficacy is a prominent factor at play in determining teachers' perceived comfort level of classroom technology use, which may be influenced by proper training (Elstad & Christophersen, 2017; Shifflet & Weilbacher, 2016; Tarling & Ng'ambi, 2016). As described within the problem statement, Elstad and Christophersen (2017) examined the relationship between student teachers' digital technology competence and self-efficacy beliefs related to influencing students to effectively use technology in learning. Results indicated that educators who lack competence and self-efficacy with technology may be resistant to incorporating

technology in literacy training because those educators feel a lack of confidence in their technological skills resulting from insufficient training (Elstad & Christophersen, 2017). The researchers suggested that teacher training and professional development programs should include strong digital technology components to improve teachers' confidence in their ability to use technology to facilitate literacy instruction.

Teacher resistance to change has been noted as a major obstacle to incorporating technology in literacy instruction (Tarling & Ng'ambi, 2016; Westberry et al., 2014). Almost one-third of the teachers in the Bill and Melinda Gates Foundation (2015) sample population chose not to integrate technology because of the doubt of its effectiveness in literacy instruction. However, one potential way of counteracting this doubt is by quantitatively addressing the concern of effectiveness, which may motivate teachers to incorporate the use of digital technologies in instruction when they experience positive improvements in student engagement and attitudes with coursework (Byker et al., 2017).

Barriers to Teachers' Use of Technology Integration in Literacy Instruction

The practice gap and underuse of internet technology in literacy instruction is a multifaceted issue, which some research indicates is perpetuated by a variety of barriers to technology integration (Barbaro et al., 2016; Makki et al., 2018; Piper et al., 2016; Seraji et al., 2017). Different types of barriers contribute to the underuse of technology in literacy instruction (Makki et al., 2018). For instance, Barbaro et al. (2016) identified three obstacles to the positive benefits of internet-based technology integration in literacy instruction: (a) resistant educator attitudes and beliefs, (b) inadequate school resources, and (c) teachers' lack of technical knowledge and skills. Limited resources and lacking

skills are barriers to technology integration in developing nations and low-income school districts, while resistant attitudes are a perceived barrier (Barbaro et al., 2016). Such barriers likely contribute to the fact that internet-based technology usage and acceptance into literacy instruction and curriculum plans has become a primary point of contention among school and district leaders in public school systems (Makki et al., 2018; Piper et al., 2016). For instance, student learning outcomes in math and reading in Kenyan schools were compared in one study using various forms of technology: e-readers for student use, tablets for teacher use, and tablets for use only by instructional supervisors. While no significant improvements in learning outcomes were reported, teachers' misunderstanding of the technology and inability to teach students how to use the technology were potential confounders of the results (Piper et al., 2016).

Alongside being a point of contention, the integration of technology into instructional practices, including in literacy teaching environments, has become a topic of increasing interest in professional development programs worldwide (Akuchie et al., 2017; Cydis, 2015; Soobin et al., 2016). In a study composed of 100 public and private secondary school teachers in Nigeria, Akuchie et al. (2017) evaluated teachers' computer literacy using a baseline scale to evaluate computer literacy and inspired professional development programs aimed at increasing technology skills among teachers. Most teachers' computer literacy levels in the study were not adequate to enable them to successfully integrate technology in literacy instruction due to a lack of understanding of how to functionally use technology. Even if provided the necessary infrastructure and hardware, the teachers were not able to use the technology provided because they did not

fully understand how to operate it; therefore, the students could not be expected to use and learn from technology (Akuchie et al., 2017).

Despite challenges related to training and skill levels, once again, research points to the validity of Knowles's (1978) framework and the importance of educating teachers about the usefulness of technology use as a facilitator and motivator for learning technical skills. Research indicates that the more connections teachers find between technology use and their specific content area goals, the more teachers value the need for technology integration and readily transfer their technology skills and knowledge to literacy instruction—a factor that could counteract a lack of technical understanding among literacy teachers by highlighting the value of technology and incentivizing teachers to learn how to better use that technology (Soobin et al., 2016).

Internet technology is becoming increasingly recognized as a teaching and learning tool in classrooms worldwide, including literacy instruction and, as such, is being incorporated into more teacher professional development programs (Akuchie et al., 2017; Cydis, 2015). Incorporating technology literacy as a required component of teacher training was found to impact preservice teachers' lesson plans. Meaningfully incorporating technology in preservice teacher training improved teachers' competency with technology tools and increased the likelihood that teachers would include technology in instruction (Cydis, 2015). Cydis' (2015) findings were subsequently supported by Paratore et al.'s (2016) study exploring the influence of media and technology instruction on preservice teachers' perceptions of technology's usefulness in teaching literacy and teachers' self-efficacy. Paratore et al. evaluated participants'

capacities to integrate technology in the classroom while maintaining effective literacy instructional practices. Findings revealed that preservice teachers who received consistent and in-depth training in technology-infused literacy instruction were better equipped to incorporate technology in literacy instruction than teachers who received short-term professional development—a finding that served to increase educators' recognition of technology as a relevant tool for instruction and the importance of training as a facilitator for effective technology use (Paratore et al., 2016). Access to frequent and consistent training was also positively correlated with positive attitudes towards the use of technology and increased self-efficacy in technology use, both of which translated to positive student outcomes (Paratore et al., 2016), a finding that connects the assumptions of Knowles's (1978) theory with the literature herein describing connections between self-efficacy, ease of use, perceptions, and actual use of technology in the classroom. Such findings imply that while incorporating technology into preservice training may increase teachers' aptitude for integrating it, failing to incorporate technology into preservice training may act as a barrier to later use. Paratore et al.'s study was significant because the results revealed potential ways in which technology could be used to close the socioeconomic disparity gap between socioeconomically advantaged and disadvantaged schools.

Researchers in multiple studies found the traditional practice of short-term, one-day, workshop-based or in-service training sessions to be insufficient for teachers, since these short sessions failed to provide ample opportunity to implement new teaching techniques with their current lesson plans (Ciampa, 2017; Morrison et al., 2016). Ciampa

(2017) concluded that professional development regarding technology use ought to be consistent, ongoing, meaningful to teachers, and contextualized to the instructors' professional settings. According to the perceptions of some, access to contextually relevant technology or technology specifically designed to meet the individualized needs of special education or ESL students is needed. For instance, one study suggested that despite the prevalence of technological resources, a common barrier to integrating technology into instruction relates to ensuring such technology meets school board standards. Some technologies may appear to be helpful, but simply do not comply with regulatory standards and are thus not appropriately contextualized (Morrison et al., 2016).

For teachers to successfully incorporate technology in their instruction, support must come from administrators (Roland, 2015). Support comes in the form of both the availability of and access to training. Training needs to be adequate, thorough, and consistent, and teachers must be given adequate time for the preparation of lesson plans that actively use technology in meaningful ways (Ciampa, 2017; Morrison et al., 2016; Paratore et al., 2016; Roland, 2018). Teacher beliefs and attitudes have a large impact on technology use. In some cases, technology use in instruction initiated by district curriculum plans has failed because implementors have neglected to consider teachers' resistant attitudes, beliefs, and lack of technical skills when developing implementation plans (Safitry et al., 2015). These teachers also demonstrated insufficient technology skills and attested to a lack of administrative support providing formal training, indicating that professional development for teachers is integral, not only for increasing self-belief

and developing a positive attitude toward technology integration but also for consistent, effective, and sustained technology use.

Implications

This study's results contributed to designing an adult professional education program based on Knowles's andragogy that promotes consistent integration of technology in literacy instruction by ELA teachers, which was designed to provide educators with instruction and support needed to address barriers and to effectively integrate internet-based technology in ELA instruction. This study also provided insights guiding and clarifying what future research may be needed in order to improve educators' professional development programs. The skills emphasized in the professional development plan were those that the data analysis indicated to be most necessary for the teacher participants to design an effective technology-integrated curriculum and choose technology-appropriate learning materials. Data collected during the research phase clarified how ELA teachers at the local setting use technology in literacy instruction and what barriers to technology use ELA teachers face.

Summary

In this chapter, I provided a broad overview of the practice gap characterizing the uneven integration and use of technology in literacy instruction indicated by ELA teachers, as well as what is known about potential barriers preventing optimal implementation of internet technology as a means to improve literacy instruction. This chapter began with a description of the local problem: the ineffective use of internet-based technology in literacy instruction by ELA teachers at the study site in rural,

Southern school. I discussed Knowles's (1978) theoretical framework as this study's philosophical guide, followed by a review of the literature concerning teachers' perceptions and attitudes towards technology integration, comfort levels with use, and barriers to use. This study's purpose was to explore how ELA teachers used technology in literacy instruction and what barriers ELA teachers encountered to integrating technology at the study site. Participants included ELA teachers in a rural, Southern school. This chapter concluded with a discussion of the study's implications for data collected. This study's findings were useful in designing a professional development program for local teachers and contributing insight clarifying what future research may be needed in order to improve educators' professional development programs.

In future chapters, I describe the methodology, results, and analysis in greater detail. Section 2 details the methodology employed in the study, describing the basis for using a qualitative methodology and a case study design to study the issue. In Section 2, I also describe the participants I recruited for the study, including inclusion and exclusion criteria, how they were engaged in a working relationship, and the process I used to obtain permission and follow ethical guidelines of research. From there, Section 2 moves on to describe the data collection process. Since I collected data using semistructured interviews and document analysis in this study, the methodology section describes the process used to construct questions that generated relevant data, the process used for conducting interviews, the process used to analyze documents, how permission was obtained, and how the study followed ethical norms for research. It also describes the researcher's role in collecting and analyzing data to address any issues of potential bias,

as well as describing how I analyzed the data. Finally, the methodology discusses the study's limitations.

Section 3 contains the final project, which entailed creating a professional development program for local educators that helped them better incorporate internet-based technology in literacy instruction. Section 3 also includes a discussion of how to evaluate the efficacy of the program and how efficacy was initially evaluated. Section 4 is a reflection on the study and the project, including conclusions drawn and their implications for future work.

Section 2: The Methodology

In this qualitative case study, I explored how teachers used internet-based technology in the ELA classroom, which technologies ELA teachers selected for integration into the ELA curriculum, and what barriers middle school ELA teachers faced when using internet-based technology and integrating technology into the ELA instruction. Researchers have suggested that there is a compelling need for studying how integrating internet-based resources into literacy instruction can be more effectively accomplished (Kostaris et al., 2017; Safitry et al., 2015). I investigated how ELA teachers in a rural, Southern school district integrated technology use in literacy instruction and what barriers these teachers faced when incorporating technology into literacy instruction.

Qualitative Research Design and Approach

Design

In response to the local problem of teachers' underuse of technology integration in literacy instruction at the study site, I conducted a qualitative case study. I devised this approach from the study's research questions, which, in the nature of qualitative approaches, I sought to answer the *what* and *how* questions of research that could not be numerically or quantitatively answered, thereby warranting a qualitative approach. Additionally, Yin (1981) introduced, and Street (1995) endorsed, the qualitative case study as a viable and effective methodology to employ within literacy research, as case studies allow for an in-depth exploration of the participants' experiences in regard to the

process of literacy instruction, teaching, and learning. In review, this study's research questions were as follows:

RQ1: How are teachers using internet-based technology in the ELA classroom?

RQ2: Which technologies do teachers select for integration into the ELA curriculum?

RQ3: What are the barriers ELA teachers face when they use technology and integrate technology into the ELA instruction?

Research Tradition and Rationale for Choice of Tradition

According to Baxter and Jack (2010), because I used these research questions to explore the behavior and practices of participants in order to understand *what* participants are doing to integrate or not integrate technology into literacy instruction and *how* participants use technology, a qualitative approach is most appropriate. Qualitative approaches often inform, support, or justify data collected through quantitative studies. Furthermore, qualitative research primarily addresses *how* and *what* research questions. Existing research documents a generational gap in technology use (Drossel et al., 2017; Howlett & Waemusa, 2018; Kostaris et al., 2017; Safitry et al., 2015). In this study, I sought to explain *what* practices surrounding technology integration characterize this gap. Also in this study, I qualitatively explained barriers to technology use in literacy instruction as perceived by ELA instructors in a rural, Southern school by exploring common themes extracted from semistructured interview data relating to teachers' perceptions of what may make technology use challenging.

Researchers use qualitative methods to seek to inform the *how*- and *what*-natured questions of research (Baxter & Jack, 2010). Contrary to quantitative studies, qualitative methodologies are not informed using numerical data. Instead, qualitative methods require rich, explanatory data (Creswell & Poth, 2018). Kim et al. (2016) described the nature of qualitative approaches in greater depth. For instance, using qualitative studies generally allows the researcher a greater amount of flexibility and variability of methods and designs that specifically conform to the nature of the study than rigid quantitative studies (Baxter & Jack, 2010; Hammarberg et al., 2016). Qualitative case studies are used in order to gain a richer understanding of individuals' perceptions regarding a phenomenon (Merriam, 2009). Because in this study I gathered rich, explanatory data from participants answering *what* and *how* questions, rather than numerical data, a qualitative case study was most appropriate.

Qualitative research was formerly regarded as secondary to quantitative research within the academic community until the late 1990s and into the 21st century, after which it gained increasing popularity and recognition (Hammarberg et al., 2016; Street, 1995). Recently, researchers have begun recognizing the value of qualitative research in informing and complementing quantitative findings. Specifically, the qualitative research within this study provided more in-depth insight than quantitative research itself can offer regarding how ELA instructors are using technology and what technologies they are using, rather than just how much ELA instructors are using technology—the latter of which would relate to a quantitative study. Although qualitative research is not hypothesis-driven, researchers in education have begun more heavily embracing

qualitative research that is strongly grounded in and rationalized by the use of appropriate guiding theoretical frameworks (Hammarberg et al., 2016). With this in mind, considering this study was grounded in Knowles's (1978) theoretical framework and considering I sought to explore and explain *how* ELA teachers use internet-based technology, a qualitative method was justified.

Qualitative research has gained increasing acceptance in the field of education. Hara (1995) attested to the appropriateness of qualitative research in education by explaining that educational research is highly complex. Qualitative research investigates pedagogy, teacher efficacy, and student success. All are interwoven and multifaceted goals and require more than numerical, statistical, quantitative data (Hara, 1995). Using qualitative research provides a path for exploring factors that are more interconnected and layered than statistics alone can describe (Hara, 1995). For instance, Eriksson et al. (2018) conducted a qualitative study evaluating primary school teachers' rationales for giving different forms of feedback. The aim of such a study (to understand teachers' rationales for giving feedback) clearly could not be addressed quantitatively. Similarly, this study's *how* and *why* questions could also not be answered numerically. Therefore, in this study, my goals were in direct correlation to the research questions I developed to understand how ELA teachers use internet-based technology in literacy instruction, to understand what technologies ELA teachers are using in literacy instruction, and to understand what barriers in using technology in literacy instruction ELA teachers are experiencing.

I used a case study design to guide this study's data collection and analysis methods. A case study approach was an appropriate design for this study because through this approach, I attempted to provide insight into *how* participants make sense of the phenomenon studied in their natural contexts and environments that are not controlled by the researcher (Creswell & Poth, 2018; Simons & Ziviani, 2011). An explanatory case study was appropriate because I was attempting to clarify, explore, and explain the lived experiences and behaviors of participants' technology use in literacy instruction. Case studies have been used repeatedly throughout education research (Frimpong et al., 2016; Simons & Ziviani, 2011).

It is important to understand the appropriateness and nature of a case study design. Researchers use case study designs to answer *how* and *why* questions of participants' experiences to explain, explore, clarify, and better understand a particular phenomenon studied, paying particular focus to understand *how* human subjects experience their environment or the world within the boundaries of a specified environment (Mills, 2010; Simons & Ziviani, 2011), which in this case included elementary literacy instruction settings. Within case study designs, the researcher does not exert control over the environment being studied. Therefore, to the researchers' advantage, case study designs provide researchers with an understanding of a phenomenon that is based on real-life situations (Mills, 2010). Disadvantages of case study designs include the fact that some researchers claim case studies lack academic rigor and lead to excessively generalized findings (Creswell & Poth, 2018; Simons & Ziviani, 2011). All qualitative research, case study designs included, requires researcher

reflection to establish a contextual base for reader understanding. According to Creswell and Poth (2018), this includes the practice of reflexivity to minimize and overcome researcher bias, as I will discuss in greater depth in a subsequent section (Creswell & Poth, 2018).

Rationale for Not Selecting Other Qualitative Research Designs

I did not select other types of qualitative research designs for this study because they were not best suited to answer the research questions. I did not choose the grounded theory design for this study because grounded theory research aims to establish a theory by gathering continual data (Ravitch & Carl, 2016). I did not seek to create a theory. Therefore, the grounded theory design was not appropriate for this study. Exploring a problem and finding new themes that emerge through data collection and data analysis is the purpose of a case study (Merriam, 2009).

The ethnography approach was not best suited for this study. An ethnography approach deals with the study of diversity of human cultures in their cultural settings over a period of time (Merriam, 2009). The ethnography approach was not appropriate because I did not conduct this study to understand the participants' cultures. In this study, I investigated how ELA teachers integrate technology use in literacy instruction and what barriers these teachers face when incorporating technology into literacy instruction.

I did not select the phenomenology approach because this study's purpose was not limited to exploring what people experience or their experience of a phenomenon (see Lodico et al., 2010). While exploring the phenomenon of research, a case study approach allows the researcher to gain a deeper understanding of an individual's real-life

experiences (Frimpong et al., 2016). I used a case study approach to gain a deeper understanding of how teachers use internet-based technology in literacy instruction.

Participants

This qualitative case study took place in one rural, Southern middle school. The study site was a Title I high-poverty school, with a total of 645 students for the 2016–2017 school year. Of these students, 96% were White, and more than half of the total students were eligible to receive free and/or reduced lunch (USDOE, 2017).

Criteria for Selecting Participants

Purposeful sampling is implemented in qualitative research, as opposed to random probability sampling used in quantitative studies, because purposeful sampling results in context-rich and detailed accounts of a specific population (Ravitch & Carl, 2016). In qualitative studies, participants are purposefully selected because the selected participants can answer the research questions of the specific qualitative study (Ravitch & Carl, 2016). The study's participant pool was 15 ELA teachers who teach at least one ELA class. I selected the teachers from the study site because it is the only middle school in the local district. Since my goal in the study was to explore middle school ELA teachers' experiences, I invited teachers at the study site who have taught at least one ELA class at the school the past 2 consecutive years or more to participate in the study, to eliminate the potential confounding factor of lack of relevant teaching experience as a barrier to technology use. The ELA teachers at the study site provided context-rich and detailed accounts about their experiences using technology in the ELA curriculum.

I purposefully selected 15 ELA teachers for inclusion in this study. This provided me with enough participants and responses to collect a well-rounded data sample, which also improved the study's trustworthiness and credibility. Using this sample size, I was able to interview teachers from the sixth-, seventh-, and eighth-grade levels, with potentially different levels of experience. Researchers recommend a smaller number of participants, such as 15 as opposed to 50, within case study designs (Creswell & Poth, 2018; Mills, 2010).

I used purposeful selection and criterion sampling to identify and recruit 15 district ELA teachers who met the guidelines defining the demographic being studied within the case study context. Purposeful selection sampling is a common method of sampling used in qualitative research. Purposeful sampling is a method of identifying participants in which research subjects are chosen based on their alignment with research subject criteria (Palinkas et al., 2015). Additionally, because purposeful sampling was the most fitting method of participant selection for use in this qualitative study, a small sample size was warranted (see Creswell & Poth, 2018). Due to the limited number of participants needed for inclusion in this study and the specific study site researched, I determined purposeful sampling was most appropriate. As Palinkas et al. (2015) noted, purposeful sampling allows for the identification and specific selection of data-rich individuals related to the phenomenon being studied. Criterion sampling is the selection of participants based upon participants' matching pre-set selection criteria. For this reason, criterion sampling constituted the most appropriate type of purposeful sampling for this study (Palinkas et al., 2015).

Cardon (2000) described the appropriate use of purposeful selection in qualitative education research. Specifically, Cardon intended to identify participants from a specific location and related to a specific phenomenon (in this case, technology used by ELA teachers in literacy instruction). Similarly, in this study, I sampled participants from a specific location (the study site) in a rural, Southern school.

I selected participants based upon the following criteria for inclusion in the study. Participants had to have taught at least one ELA class at the study site during the past 2 consecutive years. Additionally, I did not exclude participants based on race, ethnicity, gender, sexual orientation, and/or spiritual/religious preference.

Procedures for Gaining Access to Participants

I gained Institutional Review Board (IRB) approval before study procedures took place. Afterwards, I contacted the study site school's principal and superintendent via email in order to gain permission to recruit ELA teachers' potential participation in the study (see Appendix B). This letter included an explanation of the research study's intent, significance, procedures, and ethical considerations. Once approval was gained, I asked to attend an after-school staff meeting, during which invitations were extended to potential participants. I explained their potential role in the study, should they choose to participate, through invitation/recruitment letters (see Appendix C). I distributed the recruitment letters to potentially eligible participants. I included my email in the invitation letter, which I encouraged willing participants to use to contact me to indicate their interest in participating and to schedule the actual data collection interview. This letter included an explanation of informed consent and the option to sign to verify

understanding, along with an explanation of the study's intent, purpose, procedures, significance, and participant rights, including voluntary participation, informed consent, and confidentiality, as well as the selection criteria (see Appendix C). These documents are required for research involving human subjects. I did not collect these consent letters on-site, but they were returned by email so as not to coerce potential participants. ELA teachers who expressed their willingness to participate in the research by contacting the researcher by email were asked to bring copies of the last week's lesson plans to the interview meeting so I could collect data efficiently. Gaining access to participants took approximately 2 months. In this way, I provided information about the study at the staff meeting to let potential participants know about the study and their opportunity to schedule an interview privately.

Researcher-Participant Relationship

Creswell and Poth (2018) described the importance of developing a strong researcher-participant relationship to increase the likelihood that participants remain engaged in a study, follow through with participation, and provide honest answers to questions asked. In order to foster this strong relationship in this study, I notified all participants to contact me via email or text with any questions. I participated as an observer during interviews and prompted participants with questions and recorded responses. In no way did I encourage participants to answer in one way or another. I fostered a communicative, respectful, open relationship with participants. Additionally, I retained the responsibility of protecting and securing all confidential data collected, as well as ensuring participants were made fully aware of their right to voluntary

participation and informed consent. I retained the responsibility of ensuring all procedures carried out not only aligned with IRB standards but also with the study's methodology and purpose. Furthermore, I assumed the role of the inquirer and interpreter. Although I was acquainted with the participants, unavoidably, due to the nature of the small school in which this study took place, bias was minimized by the fact that I have never maintained a supervisory role with any of the participants.

Ethical Protection of Participants' Rights

In alignment with IRB and Walden guidelines, the participants' rights were protected within research involving human subjects. Creswell and Poth (2018) highlighted the ethical importance of protecting participants' rights, such as confidentiality and informed consent. To adhere to these guidelines, I took the following ethical standards into consideration. With respect to the fair treatment of human subjects, I informed participants of the right to voluntary participation. Participants' confidentiality and privacy were upheld and guaranteed. I did not disclose participant identifying information in correlation with data collected, and I kept participants' identities private. All participants' identifying information remained confidential. I placed study materials (hard copies and digital) with participant identifying information in a password-protected safe-box. I will destroy these materials after 5 years.

The study upheld the ethical principle of beneficence in the sense that the study's findings contribute to improving the quality of education for administrators, instructors, and, ultimately, students in rural, Southern middle schools. Non-maleficence was addressed in the sense that it was determined that the study's procedures posed no

psychological or physical harm to participants. Because interviews were carried out in a neutral location, participants were free to share as they liked, assured of confidentiality, without fear that their disclosures may jeopardize their employment positions. Last, nondiscrimination was addressed in the sense that aside from the selection criteria I used to obtain a sample relevant to this study's context and phenomenon, discrimination (exclusion) was not made on the basis of race, ethnicity, gender, sexual orientation, religious preference, socioeconomic status, and/or mental or physical disability. No participants meeting the selection criteria had any disabilities jeopardizing their abilities to fulfill their job duties. I guided prospective participants to contact me via email with any questions, and this, along with the assurance of ethical practices, guided the researcher-participant relationship based upon formality, respect, trust, and open communication.

Data Collection

Justification Based on Qualitative Tradition

This study's research questions guided the choice of data collection methods. The first, second, and third research questions, asking *how* and *what* ELA teachers use technology in literacy instruction and *what* barriers they face to technology use, led to the choice of semistructured interviews as a data collection method. During the interview, teachers presented their self-selected lesson plan that showed a lesson in which they integrated internet-based programs for document analysis. To complete the study in a timely and cost-effective manner, and in order to gain explanatory data from participants, I determined semistructured interviews and document analysis were most appropriate.

Semistructured interviews constituted the chief data collection method of this study. Unlike structured interviews, semistructured interviews do not prompt answers that are limited to affirmative or positive responses, but rather incite lengthier, explanatory, and expanded answers (Creswell & Poth, 2018). Unlike open-ended interview questions, semistructured interview questions prompt responses that are focused on a particular topic of the phenomenon studies, rather than a prompt that incites an open-ended, unlimited response that may discuss any part of a given topic (Creswell & Poth, 2018). This study's semistructured interviews were guided by interview questions that were focused and developed with the intent of informing the research questions.

The use of document analysis provided me with valuable information. RQ1 related to how ELA teachers use technology in literacy instruction. Document analysis sources for this study included district training programs, lesson plans, and grade-level meeting minutes (see Appendix D). I intended that a review of these documents might inform the study with evidence of *what* types of technology teachers use would be revealed.

Semistructured interviews are commonly used in case study's qualitative research (Yin, 2015). Newton (2012) described the interview as a managed, verbal exchange. Semistructured interviews, as the name implies, are semi-directed. The success of the interview depends in part upon two predominant factors: (a) the refined, skilled communication capacities of myself; and (b) the development of interview questions appropriate to the research methodology, design, and research questions (Newton, 2012; Yin, 2015). It was also important, through the process of the interview, for me to listen

carefully and acutely to participants' responses. Listening and recording data in a pure, unbiased manner was just as important as developing appropriately structured questions (Newton, 2012; Yin, 2015). To gather all relevant data, I recorded the interviews. Newton also notes that face-to-face interviews are appropriate when deep levels of understanding and clarity are sought. However, due to COVID precautions, I conducted the study's interviews via Zoom.

Adams (2015) expanded more specifically on the appropriateness and use of the semistructured interview in qualitative research. Adams described the semistructured interviews as a blend of open- and closed-ended questions, which are often followed up with *how* or *why* prompts. In this way, this study used interview questions prompting participants to expand upon positive or affirmative responses in order to gather explanatory data.

Questionnaire instruments have been repeatedly used in qualitative research to guide open-ended responses and are valued for their ability to elicit rich, in-depth narrative and explanatory responses and data. I offered written questionnaires as an alternative to responding to the interview verbally, but all participants preferred responding verbally. Nonetheless, the questionnaire instrument provided a fitting choice guiding the semistructured interview method of data collection (Yin, 2015). The interviews were not limited by a time constraint on my behalf. The entire data collection process took me approximately 3 months.

Instruments and Source for each Data Collection Instrument

I developed an open-ended questionnaire instrument to guide my interview questions (see Appendix E). The depth of inquiry used a 10-item, open-ended questionnaire instrument that guided semistructured interviews with all participants. Question 1 through Question 5 of the questionnaire related to RQ1—how participants use technology. Question 6 through Question 10 of the questionnaire related to RQ2—barriers of technology use. I recorded the interviews on Zoom and I offered a hard copy questionnaire as an option in place of speaking aloud in an interview; however, all participants preferred to speak.

While interview questions were used as the chief method of collecting data, document analysis also served as a data source for RQ1, which focused on how ELA teachers are using technology in literacy instruction. I analyzed participants' lesson plans, district training programs, and grade-level meeting minutes to inform RQ1, RQ2, and RQ3. I also evaluated participants' district training programs and grade-level meeting minutes to build my understanding of how they integrated technology into instruction. I explain this process of data collection and review through the interviews and review of the training programs and meeting minutes in this section.

I developed a document analysis questionnaire instrument as a means of guiding the evaluation of district training programs, lesson plans, and grade-level meeting minutes (see Appendix D). This document questionnaire asked questions I applied when reading each of the documents collected. Specifically, the questionnaire sought to elicit an understanding of how ELA teachers use technology in literacy instruction based on the

instructional and curriculum content information contained in these documents. Since these documents evaluated contained information regarding teachers' content plans and instructional methods, I was able to gain valuable insight into how technology was being used.

Procedure for Collecting and Recording Data

After I collected the signed consent letters from participants, I scheduled the interviews. I allotted an unlimited time per interview to allow each participant to answer the questions as thoroughly as possible. I recorded and transcribed the interviews immediately after they were completed. I conducted the interviews confidentially on Zoom due to the pandemic. Participants' responses to each question were thus recorded. When each interview was complete, I concluded the interview by asking the participant if there was anything else they would like to add, before concluding and thanking each participant for their time. I then transcribed the data collected and recorded using Descript. This process of transcribing took approximately 1 week. To verify the accuracy of the transcripts, I remitted copies of each corresponding participant's responses to each respective participant, asking them to verify that the transcript of their response was correct. After transcribing and verifying the accuracy of transcriptions, I terminated the participants' voice recorded responses (Zoom recordings) to protect participants' confidentiality and privacy. Also, after each interview, I collected grade-level meeting minutes and lesson plans from each participant willing to share. Upon collection, I analyzed the documents according to the processes described in the data analysis section.

During the data collection process, I assumed the role of spearheading all necessary steps of the study.

Procedures for Gaining Access to Participants and Data

After IRB approval, I gained permission from the school's superintendent and principal to recruit ELA teachers' potential participation in the study by emailing a letter describing the research study's intent, significance, procedures, and ethical considerations. Next, I asked to attend an after-school staff meeting, during which invitations were extended to potential participants. I then explained their potential role in the study, should they choose to participate, through invitation/recruitment letters. This letter included an explanation of informed consent, the option to sign to verify understanding, and an explanation of the study's intent, purpose, procedures, significance, and participant rights, including voluntary participation, informed consent, confidentiality, and selection criteria (see Appendix C).

In this study's initial letter to the superintendent and principal, I requested that the superintendent provide me with copies of district training plans and grade-level meeting minutes from the last 6 months. I collected these documents so that I could evaluate them to inform the research question of how technology was currently being integrated by ELA teachers into literacy instruction.

Timeline for Data Collection Steps

Gaining access and data collection took approximately 7 weeks and included the following steps:

1. An after-school meeting was scheduled within 2 weeks after IRB approval of the study. During the meeting, I distributed consent letters with information about the study to potential participants but did not collect them. The letter included instructions to potential participants to privately email the researcher to set up an interview, should they want to participate. I collected the district training plans and grade-level meeting minutes from the superintendent.
2. During the next week, I scheduled interviews with those who reached out and expressed interest. I replied to interested participants by emailing them the schedule email form.
3. The final 4 weeks of the 7-week timeline included conducting interviews.

Role of the Researcher

Past and Present Role of the Researcher at the Study Site

Currently, I am an eighth-grade ELA teacher in the school where the study took place. I have only been employed as an ELA teacher at the study site and have never held a supervisory role at the study site. My personal experience with ELA and technology use and its implications in the local setting inspired this study.

Past and Present Relationship of the Researcher with Subjects

I am a colleague to the other ELA teachers at the study site, and because the study site is situated in a small town, all ELA colleagues are acquaintances and professional colleagues with one another. I have never had nor have a supervisory role over any of the other ELA teachers at the study site.

Researcher's Experience and Bias

It is important to recognize and acknowledge, considering my motivation for this study, any relevant biases related to the research topic (Creswell & Poth, 2018; Merriam, 2009). As a Generation Y citizen and a rural, Southern state student, I have witnessed the benefits to student learning associated with effective technology use in literacy instruction. As a computer-savvy, digital native, I felt inspired to better understand how rural, Southern middle school teachers use technology in literacy instruction and how various barriers served to impede effective technology use for some ELA teachers. Additionally, my former and personal experience with technology has profoundly influenced my own learning process. With this background in mind, I wanted to uncover what barriers may hinder instructors' use of technology in literacy instruction. I recognized these biases and took steps to set these motives aside from the interspersion of results and objectively explored and analyzed the data gained from participants by conducting the study with bias-minimizing and accuracy-confirming considerations in mind.

This study's inquiry is relevant and applicable to my professional context and involvement as an educator and as a researcher. However, to minimize the possible influence of personal bias on this study, this study was inspired by existing research described in the introduction of this study and off of other ELA teachers' personal experiences of discrepancies in technology use in literacy instruction, also noted in the introduction. Other teachers' comments of experiences and existing research contributed to my interest in exploring how technology is used by ELA teachers and in exploring

what barriers to technology use teachers face at the study site. Based on anecdotal, experiential evidence, I believe that technology use in literacy instruction holds promising implications for minimizing student achievement gaps, which contributed to the motivation for conducting this study.

To confirm the accuracy of the research conducted, as well as to minimize the potential influence of bias, Creswell and Poth (2018) recommended that the researcher incorporate member-checking and peer review of the data. Member-checking entailed allowing participants to review my interpretation of emergent themes and ideas in order to ensure the themes accurately reflected participants' sentiments. Findings were also reviewed with peers to potentially identify alternate explanations. Both member-checking and review of findings with peers, as recommended by Merriam (2009), provided a means of improving accuracy. These measures also assisted in minimizing information bias (Creswell & Poth, 2018).

Data Analysis

Data Analysis Approach and Methods

For the sake of organization, this section first describes how I approached and carried out the data analysis methods. Following, in the next section—Data Analysis Results—I describe the results that provide evidence of the themes, supported by participant responses.

Three research questions guided the study's data analysis of the semistructured interviews and the document data:

RQ1: How are teachers using internet-based technology in the ELA classroom?

RQ2: Which technologies do teachers select for integration into the ELA curriculum?

RQ3: What are the barriers ELA teachers face when they use technology and integrate technology into the ELA instruction?

The data analysis took me approximately 8-10 weeks to complete. Once data were collected, it was my responsibility to interpret the data within the context of the study's purpose, in an unbiased manner (Baxter & Jack, 2010; Mills, 2010; Saldana, 2015). In this study, I used a thematic analysis to interpret the data collected from both semistructured interviews and documents. Thematic analysis is a method of analyzing qualitative data that organize participants' responses into categories and topical themes relating to and informing the study's corresponding research questions (Castleberry & Nolen, 2018; Saldana, 2015). The findings of a thematic analysis provide rich, explanatory data. The analysis is conducted by evaluating data based on keywords and phrases that are organized and identified using reference codes (Castleberry & Nolen, 2018; Saldana, 2015). Reference codes are then grouped into categories, and finally, researcher-initiated interpretation derives overarching themes from the categories defined. In this way, the findings are thematically linked to the research questions and provide insightful answers based on participants' responses to semistructured interview questions and common instructional methods identified through lesson plan analysis. Within this process, the use and consideration of semantics and consistent definitions are important (Castleberry & Nolen, 2018; Saldana, 2015). As Castleberry and Nolen (2018) described, thematic analysis is a popular data analysis method used in qualitative research

throughout numerous fields, including health sciences, social sciences, psychology, business, and education, which made it a suitable analysis approach for this study.

Thematic analysis was in alignment with this study's methodology and design. Numerous, peer-reviewed qualitative studies in the field of education have used a thematic analysis to interpret findings and arrive at conclusions (Baxter & Jack, 2010; Creswell & Poth, 2018; Mills, 2010; Saldana, 2015). Thematic analysis uses a process by which keywords and phrases are grouped into categories, through which themes are then interpreted from (Saldana, 2015). I conducted the coding manually. I coded participants' similar keywords and phrases and grouped them into categories, allowing for the interpretation of common themes relating to the use of technology, what technologies are used, and potential barriers to technology. By using thematic analysis to uncover predominant themes and patterns informing the study's research question, the study's results offered meaningful data, which clarified how ELA teachers use internet-based technology and what barriers ELA teachers experience to internet-based technology use in literacy instruction. The identification of common themes and categories throughout participants' responses to interview questions, as well as within lesson plan documents, allowed me to identify emergent patterns informing the research questions.

Through document analysis of ELA teachers' lesson plans, I attempted to understand how participants were embedding digital technologies into daily literacy instruction. Document analysis is a type of qualitative research through which I interpreted documents in order to give meaning to the topic being assessed (Bowen, 2009). The process of document analysis involves the incorporation of coding content

into themes, similar to how interview transcripts are analyzed (Bowen, 2009). Physical evidence that may be used in instances of document analysis includes agendas, handbooks, lesson plans, and training materials ("An Introduction to Document Analysis," 2016). As such, this study used lesson plans, meeting minute notes, and district-level training plans, because these types of documents specifically contained information relevant to informing RQ1, specifying how ELA teachers use what types of technologies in literacy instruction.

Before analyzing the documents, it was important for me to carefully plan how I reviewed and collected documents. Yin (2015) recommended developing an organized scheme for evaluating documents once collected, ensuring copies of the documents are made and considering potential biases of the document authors. Exploration and consideration of the tone and purpose of all lesson plans also underlined my review of the lesson plans evaluated within this study. Once these background factors of tone, purpose, and bias were considered, I reviewed lesson plans using the questions in Appendix D as guides, looking for common themes or patterns indicative of how digital technology was potentially embedded into lessons.

Data Analysis Procedures

For the sake of organization, this section describes how I carried out the data analysis procedures. The Data Analysis Results section describes the evidence of the results. I followed the following process to complete this study's data analysis procedure. After I transcribed the study's data, I uploaded interview question response data into NVivo for analysis, following the Kent State (2019) procedure recommendations. I

organized data in NVivo as follows: Separate tabs or spreadsheets were allocated to each research question. Sheet 1 and Sheet 2 included interview data. Sheet 3 included lesson plan analysis data. Sheet 4 included district training program data, and Sheet 5 included grade-level meeting minute data. I also uploaded document analysis data on Sheet 3 through Sheet 5 into NVivo, according to my notes taken during the process of reviewing documents and evaluating each for themes and patterns.

I organized documentation and note-taking pertaining to lesson plan evaluation in the same way I organized and assessed interview data in NVivo, using rows and columns for organization. For instance, each document type received its own page and analysis questions were assigned to rows, while the collected data informing those questions corresponded. Columns pertained to each participant's provided document. Within each sheet in NVivo, I listed participants' numerical pseudonyms in Column A, while participants' corresponding interview responses and lesson plan data were listed in columns. I searched the data for common keywords and phrases, to which I assigned numerical reference codes. Next, I grouped common reference codes in order to form categories. Based on my analysis of the categories uncovered and their underlying codes, which included participants' words and responses, I developed overarching themes. I then described how each of these themes derived related to each of the study's three research questions and conceptual framework through this study's results discussion. I broke down the entire document analysis procedure according to the following steps, each of which took approximately 3 days.

1. I organized the data according to each research question and assigned reference codes to the data according to keywords and phrases.
2. I evaluated my notes for themes and patterns matching reference codes used to code interview data.
3. I coded data from the document analysis component.
4. I extracted categories from all data.
5. I formed subcategories.
6. I derived and presented themes based on categories.
7. I drafted a written account of how each theme related to each research question and conceptual framework.
8. I summarized this information within the results and discussion section of this research.

Procedures to Assure Accuracy and Credibility of the Findings

Ensuring qualitative data analysis methods are conducted with appropriate, sound, and reputable rigor is imperative to ensure qualitative findings contribute to existing research in a trustworthy manner. Improving the trustworthiness of qualitative data analysis methods depends in part on the precision, consistency, and exhaustion of data analysis (Nowell et al., 2017). For this reason, I reviewed each participant's response to each question using NVivo sorting methods to code keywords and phrases with numerical reference codes. I used these codes to continue the process of organizing and grouping data into ever-larger related categories and, finally, into themes. Nowell et al. (2017) further asserted that the thematic analysis method is helpful and useful in

exploring perspectives of research participants, as this study did, making it an appropriate choice. Additionally, the thematic analysis helped me summarize key findings of data collected from multiple participants because it required me to exercise a structured approach to evaluating and organizing the data (Nowell et al., 2017).

Once transcribed and summarized, I remitted a summary of themes uncovered to each participant for verification of accuracy. This process of allowing participants to review the data improves the trustworthiness of data (Creswell & Poth, 2018). I completed this process by first providing participants with a copy of their respective transcribed interviews, so that they could confirm the accuracy of their own words. I also provided each participant with a copy of the thematic findings uncovered through this research, asking participants if they felt it accurately represented their experience and what they had described. All participants felt that their experience described was accurately reflected in the findings in some way. I established transferability by thoroughly documenting the study's procedures, so that a study of similar nature may be carried out and accurately compared. I used triangulation to compare and cross-reference reference codes and data collected between document-derived themes and interview question response themes (Nowell et al., 2017).

Procedures for Dealing with Discrepant Cases

I discarded discrepant keywords or phrases repeated two times or less as outlying, so as not to complicate and confuse the results. I used reference codes to identify keywords and phrases. I noted and recorded the number of times a reference code appeared among different participants or among participants' lesson plans (rather than

one participant), since such a prevalence increased the weight of each category and theme derived from that reference code. In other words, if only one participant mentioned a particular phrase four times, but no other participant noted the same phrase, it did not hold the thematic weight that a phrase mentioned once by four different participants did. For this reason, I predominantly derived categories and themes from common keywords and reference codes mentioned more than twice by different participants in relation to the same or different interview questions. I grouped related keywords and phrases that may be semantically similar, but not necessarily identical or synonymous, to form categories. The process of data analysis took approximately 1 week.

Researcher bias is an important component for consideration in any study—qualitative or quantitative. Reflexivity is the process of practicing reflection, or awareness towards one's own biases as a researcher (Creswell & Poth, 2018). By simply becoming aware of potential biases and listing them, I took proactive steps to ensure any biases did not influence the interpretation of results. Becoming aware of biases aided me in refraining from imposing those biases upon the interpretation of results.

Limitations

Several limitations arose within this study. First, this study was limited in the sense that the study only explored the behavior of rural, Southern ELA teachers at the study site. The results of this study will not be generalizable to other locations and/or middle schools. Despite this limitation, the results provide thoughtful insight regarding the use of technology in literacy instruction, which educators, other researchers, and future studies may apply to and use to guide inquiry. Additionally, the study was limited

to the extent that I only interviewed a small number of participants. Despite the limitation of lacking generalizability, results provide valuable, explanatory insight regarding the lived experiences of the educators in the school where the study took place. These two limitations are also delimitations of the study in the sense that they allowed me to collect more in-depth, rich, and extensive data than would otherwise have been possible were a larger sample size and broader geographical area studied. Additionally, these limitations allowed the study to be feasibly carried out in a time-efficient manner, so that by the time the results were collected and interpreted, they were still current and relevant to the issue studied.

Data Analysis Results

In this qualitative study, I collected data through semistructured interviews and document analysis in order to explore how ELA teachers at the study site use internet-based technology applications in literacy instruction and the barriers to internet-based technology use ELA teachers face. The following research questions were developed based on Knowles's (1978) theoretical assumption that adult learners are most interested in acquiring knowledge in areas that have direct relevance to their careers and personal lives. I thematically evaluated the results using a process of reduction and coding to answer the following research questions:

RQ1: How are ELA teachers using internet-based technology in the ELA classroom?

RQ2: Which technologies do teachers select for integration into the ELA curriculum?

RQ3: What are the barriers ELA teachers face when they use technology and integrate technology into the ELA instruction?

Data Collection and Analysis

I performed the data collection and analysis using guidance from Creswell and Poth's (2018) and Saldana's (2015, 2020) guides for qualitative researchers. A review of Creswell and Poth's and Saldana's guides indicates that the reductionist process of coding may be performed in slightly different ways, in accordance with what is most fitting to an individual research project or study design. In all cases of trustworthy qualitative research, however, the process of qualitative coding involves a process of reduction that identifies the essential meaning indicated in the data collected (Creswell & Poth, 2018; Saldana, 2015, 2020).

In this exploratory case study, identifying the essential meaning of data involved understanding the most significant essential meaning of participants' lived experiences in relation to the research questions, based upon interview and document data collected. Understanding what participants experience and how their experiences inform the research questions (how they use internet-based technology, what technologies they use, and barriers to use they face in literacy instruction) was accomplished by using a reductionist approach of explication to code the data and thematic analysis to identify relevant themes describing participants' experiences. Saldana (2015, 2020) explained this reductionist coding process of explication by outlining the following steps: (1) breaking up interview transcripts line-by-line or statement-by-statement in a left-hand column; (2) restating the meaning of each statement or line in a righthand column in a condensed,

simplified manner still using participants' own words (forming condensed meaning units); and (3) stating the essential meaning of each line or statement in a far righthand column (forming significant statements. After this process of explication, the researcher can then complete thematic analysis by evaluating the meanings documented in the far righthand column and identifying common keywords, phrases, or patterns of meaning that signify themes. This process of explication and thematic coding applied to this study is summarized and described as follows and is demonstrated with evidence from this study in Table 1.

- Identify condensed meaning units from the data.
- Identify significant statements off essential meaning.
- Identify patterns and themes throughout the significant statements.

This process of identifying themes from the data by looking for patterns can also be performed through an evaluation of statements and phrases found throughout the documents evaluated. The process applied in this study is demonstrated with evidence in Table 1. Saldana (2020) described how the process of coding and thematic analysis is appropriate to qualitative inquiry and provides the grounds for a rich discussion of data:

> Theming the data is perhaps more applicable to interviews … rather than researcher-generated field notes.... Theming data is appropriate for all qualitative studies.... the process consists of extracting verbatim significant statements from the data, formulating meanings about them through the researcher's interpretations, clustering these meanings into a series of organized themes, then elaborating on the themes through rich, written description. (p. 200)

I used the following procedures to collect data after the participants signed the consent letters and I collected the letters. I scheduled the interviews, allotting an unlimited amount of time for each interview. After each interview, I collected grade-level meeting minutes and lesson plans from nine of the participants who were willing to share. I then recorded the interviews and transcribed them immediately after each interview. I conducted the interviews on Zoom due to COVID precautions. I recorded the Zoom sessions with each participant's consent and transcribed the interviews using Descript software. This process of transcription took just over 1 week, which was close to the timeframe anticipated. I submitted copies of each transcript to each corresponding participant to verify the accuracy of their transcribed responses. If necessary, I corrected transcriptions according to each participant's feedback of the recordings.

The documents collected after each interview were emailed to me in PDF format, and I analyzed the documents to look for indications of how each document informed the research questions, indications of how teachers were using technology in the classroom or barriers they may be facing. I uploaded the transcribed and corrected interview data and document analysis notes into Excel for analysis using reduction and explication (a process of extracting significant meaning from data; Kent State, 2019).

The first Excel file contained raw data with a separate sheet for each interview. I performed coding by reading each interview and using a process of reduction and analysis to interrupt the basic meaning of what participants said. This entailed extracting condensed meaning units, using the participant's own words, in a more consolidated fashion from the original interview answer. I wrote condensed meaning units in the

column immediately to the right of the first column, which contained the original interview data. From the condensed meaning units, I extracted significant statements and wrote them to the right, in the third column. I determined statements as significant from the condensed meaning units based on a statement's relevance to the research question. Research question relevance was coded using colors (blue for RQ1, green for RQ2, and yellow for RQ3). I evaluated lesson plan notes and highlighted key aspects observed from lesson plans in correspondence with appropriate related research questions.

From this point, I transferred significant statement data and document data highlighted and relevant to the research questions to another Excel file, in which I allocated separate spreadsheets (tabs) to each research question. Hence, Sheet 1, Sheet 2, and Sheet 3 included interview data respective to each of the three research questions. Sheet 4 included lesson plan analysis data. Sheet 5 included district training program data, and Sheet 6 six included grade-level meeting minute data. I performed document analysis data on Sheet 4 through Sheet 6 by evaluating the data for relevance to research questions, highlighting by color-coding accordingly and also by evaluating similarities or patterns across the data indicative of themes.

Similarly, the research question categorized significant statements from interviews, which I evaluated for patterns indicative of themes. Evidence of participant responses is described below, beginning under the subheading "Results According to Research Question," for the sake of organization. First, I describe the process I carried out for data analysis, followed by the results/evidence. Patterns became evident, as I noticed similar statements, meanings, or phrases noted by participants, such as reasons

they mentioned for feeling reluctant to use technology, concerns they expressed, words many participants used to describe the technology, and other similarities in data. Identifying these patterns was useful as a means to identify themes that concisely and accurately described participants' lived experiences of technology use in the classroom and that accurately and concisely described the meaning of what participants were describing during their interview.

During this process of analysis, I used numerical pseudonyms to identify participants within the Excel documents in an effort to protect participants' confidentiality. I began the process by assigning numerical reference codes to common keywords and phrases across the data, in fitting with the process of coding some scholars have used (Creswell & Poth, 2018; Nowell et al., 2017); however, I quickly found that this extra step was cumbersome and unnecessary for the nature of my data collected. A simpler and more fitting approach was to simply use the process of making notes of condensed meaning units and following significant statements.

After I identified significant statements, I began naming the overarching theme using words, which became apparent from each significant statement, in the next column to the right. This allowed me to systematically proceed through the data without missing any potentially pertinent information. It also eliminated the step of using numbers to identify theme words that would be more directly and accurately described, as recommended by Creswell and Poth (2018). For instance, as I saw significant statements that described participants' experiences with technical support or lack thereof, I began to identify those statements with the theme word *support* in the right-most column. Using

this process, I was then able to read through my themes to the right and organize them accordingly, so that all significant statements describing common themes were grouped. The simplicity, but thoroughness, of this reduction process allowed me to understand, accurately, the meaning and theme of what participants experienced and relate those experiences to the research questions in a systematic, efficient, organized way. Similarly, using this process of reduction on the notes from documents collected allowed me to then cross-check themes between interview data and document analysis data to develop the cohesive list of themes from the data. I noted and excluded discrepant cases from the discussion of themes. Prior to use, the committee members reviewed the interview protocol to discover and bring to light any preconceptions and biases and to improve dependability, as recommended by Peoples (2020). I gave participants a copy of their transcription to review for accuracy and misconceptions during member checks. There were no participant requests for transcript reviews. Through an ongoing, iterative process, I sought to identify any discrepancies that did not support the themes resulting from the data. I documented information and codes that did not fit a specific theme or category.

Demographics

Figure 1 describes the participants demographics. There were 10 participants in the study, seven females and three males. The majority (eight) of the participants were White, with the minorities being one Hispanic female and one Black male participant. The small sample size was a weakness of the study.

Figure 1

Participant Demographics

	Ethnic Categories			Racial Categories								
	Hispanic or Latino	Not Hispanic or Latino	**Ethnic Category Total**	American Indian or Alaskan Native	Asian	Black, not of Hispanic Origin	Native Hawaiian or Pacific Islander	White, not of Hispanic Origin	More than one race	Other or Unknown	**Racial Category Total**	**Totals**
Female	**1**	**6**	**1**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**1 hispanic, 6 white**	**7 F**
Male		**2**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**2 white, 1 black**	**3 M**
Unknown	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Total	1	9	1	0	0	1	0	8	0	**0**	0	**0**

Summary of Results According to Research Question

An analysis of results revealed the following themes describing how ELA teachers at the study site use internet-based technology applications in literacy instruction and the barriers to internet-based technology use ELA teachers face: (a) generational differences are perceived to impact technology use and comfort levels, (b) motivation levels impact technology use, (c) lack of knowledge or skill impacts technology use, (d) lack of support is a barrier to technology use, (e) beliefs about technology impact how it is used, and (f) most-used technologies include videos and Google Suite applications. These themes are highlighted in Table 1, respective to their relevance to the research questions and examples of related verbatim interview data (multiple significant statements and condensed meaning units were related to each theme, but for the sake of brevity herein, a single example of a related significant statement and condensed meaning unit is given for each theme).

Table 1

Summary of Themes Related to Research Questions

Related research question	Condensed meaning unit	Significant statement	Theme
How are ELA teachers using internet-based technology in the ELA classroom?	"Using technology just comes easier to younger teachers—they grew up with it. I don't use it as much as them, because I just was never taught how."	Technology use comes easier to younger teachers; I am older, and I was never taught it.	Generational differences are perceived to impact technology use and comfort levels.
	"The district doesn't require it of us so I've never learned it; plus, I wouldn't know where to begin."	It's not required of us, so I haven't learned it.	Motivation levels impact technology use.
	"I don't know… it sounds like a good idea sometimes, but I just worry that then they [students] would just be on social media all the time."	I believe technology might be a distraction in class if I use it more.	Beliefs about technology impact how and whether or not technology is used in literacy instruction.
What are the barriers ELA teachers face when they use technology and integrate technology into the ELA instruction?	"Technologies are always changing so fast…I'm really not comfortable or confident taking that on my own."	I am not confident in how to use new technologies on my own and I don't know how.	Lacking knowledge and skill impacts technology use, skill, use case, and comfort of use.
	"I guess I'd want to see how it was really going to help and be shown how to use it."	I need help to use it and I need to know why I should use it.	Lack of support is a barrier to technology use.
Which technologies do teachers select for integration into the ELA curriculum?	"Sometimes I show them videos on YouTube, but mostly I have them upload their assignments in G-suite."	"I mostly use G-suite and sometimes YouTube."	Google Suite and videos are the primary internet-based technologies used by participants in instruction.

Contextualized within the research questions, these themes inform the research questions as follows.

RQ1: How are ELA teachers using internet-based technology in the ELA classroom? Teachers most often reported using technologies (such as, videos and Google Suite document sharing platforms) for sharing assignment instructions, sharing video curriculum content with students either in class or on their own time, and/or for collecting posted and uploaded assignments from students. Teachers seldom referenced using interactive learning applications, modules, and/or chatroom platforms.

RQ2: Which technologies do teachers select for integration into the ELA curriculum? The technologies most referenced by ELA teachers interviewed as being used in the classroom included videos (such as, showing mp3 files to students and/or videos on YouTube) and Google Suite applications (such as, Google Docs). Google Docs, for instance, was referenced as being a common way documents, such as assignment instructions, were shared with students and how students were sometimes told to upload their assignments to a shared folder.

RQ3: What are the barriers ELA teachers face when they use technology and integrate technology into the ELA instruction? Participants interviewed described facing the following barriers to using technology in ELA instruction: (a) generational differences, which may be perceived as creating knowledge, skill, comfort of use, and use case gaps to technology use; (b) lack of motivation to use technology; (c) lack of support for learning new technologies; and (d) the perception or belief that technology is not useful for the purposes of teaching and learning.

The results discussed according to themes describe the data using examples from participants' quotes stated within interviews and using notes from the document analysis. Of the 10 participants interviewed, six were below the age of 45 and four were above the age of 45. Seven were female and three were male.

Results Discussed According to the Themes

Generational Differences are Perceived to Impact Technology Use and Comfort Level

When asked to describe whether or not participants thought they used internet-based technology similar to other teachers or educators in their positions, most participants responded by citing generational differences as categorizing how teachers used technology. Senior teachers, such as those above the age of 50 or 60, described using technology less; whereas, younger teachers, in their 20s, 30s, and even 40s, described being closer to digital natives. Participant 2, for instance, described, "Using technology just comes easier to younger teachers—they grew up with it. I don't use it as much as them, because I just was never taught how." Participant 5 noted, "I think I use technology a fair amount. I mean, I don't use it as much as I could, but I think it helps with making things more efficient." A few participants said they did not know how much other teachers were using technology, but some suspected "older teachers aren't using it as much." Finally, many younger teachers interviewed indicated they wished that, or felt it would be useful if, some of the older teachers would try using technology more in the classroom because, as Participant 4 noted, she thought it might "help students stay engaged more and take some of the weight off of teachers' shoulders."

A review of documents indicated that three of the four older teachers (those above 45 years of age) seldom indicated their use of technology, besides email and occasional video viewing. Of the six younger teachers interviewed, a review of documents indicated that these teachers more often used Google Suite and video software more comprehensively. Two of the younger teachers used other programs, including an online note-taking platform, and one used an interactive module software. District training plans provided no indication of requirements for technology use, other than the user.

Motivation Levels Impact Technology Use

Teachers interviewed were asked if they encountered any difficulties in using internet technology in literacy instruction, and if so, in what ways. Most teachers interviewed expressed difficulties, which in addition to being described in the following themes, also relate to a lack of motivation many interviewed expressed. The lack of motivation described was in relation to using technology. Three of the four participants interviewed over 45 years of age said they felt little motivation or incentive to implement new technologies in their ELA instruction because the district was not requiring it of them and/or because they "wouldn't know where to begin," as Participant 3 noted, or because they "didn't know how to use technologies," they thought might be helpful and were worried they would "add a distraction to kids in the class." Additionally, Participant 4 noted they felt reluctant to use other technologies because they felt more confident using the instructional methods they always used and thought they were "effective enough."

The lack of notations regarding implementation of technology use in classrooms was evident through document analysis of meeting minutes. District-level training plans also indicated a lack of intention to use technology. As described previously, district training plans indicated no requirement for ELA teachers to use technology. Most technologies indicated for use in teachers' documents provided included Google Suite applications and videos.

Lacking Knowledge and Skill Impacts Technology Use, Skill, Use Case, and Comfort of Use

Participants were asked if they encountered any difficulties in using internet technology in literacy instruction, and if so, how or in what ways. Most participants interviewed described some form of lacking knowledge or skill. For instance, senior teachers (above 45 years of age) described their experiences of difficulties as, "I just don't have the skill younger digital natives do…. Maybe it would help if I knew how to use [more technologies]," and similarly, "I suppose it [software applications] might help with instruction sometimes, but I wouldn't know when's the best time to use it." Participant 1 described,

> Technology is all the craze, but I really don't know if it helps kids learn; it takes a lot of time to learn how to use or when to use it so that it's not just a distraction … and then technologies are always changing so fast … I'm really not comfortable or confident taking that on my own.

Participants were also asked if there were specific aspects they thought facilitated and supported using internet technology in literacy instruction. Some participants

commented on how they thought it might be useful if it saved time or made grading and assignment collection easier, but did not have the knowledge of what programs could provide that. Participant 6 described, “Google Suite is all I’m comfortable using, and I like Google Docs because you can share files in one place.” Participant 5 noted,

> I just wish there were an application that could do all the tedious work of editing my students’ documents for them and correcting simple errors, and then I would have more time actually coaching them and helping them with more complicated areas of literacy they need to learn. I wish there were an application that could help me tailor my teaching more … but I don’t know what technologies could offer that.

When asked what important facilitators participants thought should be leveraged related to internet-based technology use in literacy instruction, many participants also mentioned skill, knowledge, and comfort of use in some way. For example, Participant 3 described,

> I feel so unfamiliar with internet technologies on my own even, let alone using them in class. I wouldn’t know where to begin and that could really screw up my classroom organization if we took a whole period just learning how to use something. I don’t have a lot of flex room in my time. If we had to use some type of technology, I guess I’d want to see how it was really going to help and be shown how to use it.

Similarly, Participant 1 described his experience by stating, “I haven’t used them [internet technologies] much personally. I suppose understanding better why we should use them would be the best place to start.”

Considering that the document analysis contained little indication of technology use by teachers, aside from videos and Google Suite applications, the document analysis data (which primarily informed *how* teachers are using technology in literacy instruction) aligned this theme's findings, indicating knowledge and skill of technology use are lacking among these ELA teachers and thus contributes to lack of technology use.

Lack of Support is a Barrier to Technology Use

As partially described within the prior themes, many participants mentioned, either directly or indirectly, a lack of support for technology use as a barrier to use. One participant noted, "I guess I'd want to see how it was really going to help and be shown how to use it." Likewise, another described, "I'm really not comfortable or confident taking that on my own." Others stated, they "didn't know how to use technologies," that some "direction or help would make a lot of difference," and that, "we're [teachers] not really given any guidance when it comes to technology use, especially for those of us who are not digital natives." A review of the district-level training plans also indicated a lack of supportive resources or any training programs regarding technology use in instruction that teachers could otherwise have access to.

Beliefs about Technology Impact How and Whether or not Technology is Used in Literacy Instruction

Participants were asked how they perceived internet technologies to assist or hinder the process of teaching and literacy learning. Most teachers interviewed, except for two younger teachers (below 45 years of age) who used modules and technologies other than Google Suite in class, indicated they believed technology to mostly not be

useful for teaching and learning. For example, one participant described, “I’m sure it [technology] might help sometimes, but I just don’t think it could benefit my students enough to take the time to learn. I could see it just becoming a distraction.” Also, most teachers mentioned, in some way, apprehension towards the potential distraction having internet technology in the classroom could create. For instance, one participant explained, “I don't know … it sounds like a good idea sometimes, but I just worry that then they’d [students] just be on social media all the time. That might detract from their learning.” Statements such as this, about technology being a potential distraction, also indicated how some participants viewed barriers that might be addressed in relation to technology use—including that it could be a distraction.

Participants were asked if they felt technology is a helpful addition or a negative addition to literacy instruction. In response, participants’ descriptions of their beliefs and experience indicated beliefs about technology being a potential hindrance and, therefore, informing their choices to not pursue using internet technology more. One participant noted, “Kids are so distracted these days! The last thing I want to do is give them another device or thing to click on. They need to really engage to learn.” Another stated, “I know it’s probably where we’re going [using more technology], but I just worry it detracts from learning.” Finally, another participant said she just “sees no need to use internet-based technology” because her teaching style is “fine the way it is,” so she does not use technology at all.

Google Suite and Videos are the Primary Internet-Based Technologies Used in Instruction

When asked what technologies participants used, two of the younger teachers used technologies other than Google Suite, including module and chat applications. But eight out of the 10 teachers interviewed either used no technology or only Google Docs, email, and/or videos as mp3 files or YouTube videos. An analysis of documents provided confirmed these statements. No requirement to use any internet-based technology was stated in district-level training plans, and teachers' documents provided indicated the use of only videos and Google Suite, except for by two teachers.

Findings in Relation to Theoretical Framework and the Local Problem

Knowles's (1978) theoretical framework essentially assumes that adult learners are most interested in and motivated to acquire knowledge specific to areas with direct relevance to their careers and personal lives. Findings revealed that most participants interviewed saw little use or relevance for the inclusion or adoption of internet-based technology in literacy instruction. Also, findings indicated most participants seldom used internet-based technology within their instructional practices or used technology, such as Google Suite and YouTube, in a limited manner. The finding that participants exhibited a lack of internet-based technology use, a lack of knowledge or skill regarding internet-based technology use, and that most perceived it to be largely irrelevant to their instructional methods, supports the assumptions of Knowles's framework. Said differently, it may be suggested, because participants did not see the relevance of using internet-based technology as a viable means to improve literacy instruction and learning

may largely explain why they did not feel motivated to self-initiate learning or adopting internet-based technologies. In other words, because most did not believe it to be useful to their career, most did not make the effort to learn how to use new technologies or incorporate them into literacy instruction.

Only 41% of the local study site's ELA teachers were reported by Clever data as using Accelerated Reader 360, a platform that facilitates language instruction (Green, 2017). Interestingly, only two of the 10 participants interviewed reported using Accelerated Reader 360 (two of the younger teachers—the only two who used other technologies besides Google Suite and videos). This demonstrates a discrepancy between Clever's data collected over a year ago, before the study's procedures were carried out, and data collected during the study's procedures that took place during 2021. One likely explanation for this is that some teachers who were using Accelerated Reader 360 may have left the institution. Three potential participants chose not to follow through with study procedures, so this could have also affected this discrepancy between the study findings and previous Clever data. Despite this discrepancy, the study's results still indicate a lack of technology use in literacy instruction at this local site, in comparison to national levels of use that top 77% for comparable grade levels' learning literacy (DeKalb County School District, 2018). Moreover, the study's results support Walker's (2017) and DeKalb County School District's (2018) evidence of teachers' reluctance and failure to use technology in literacy instruction at the local site, as found through surveys indicating that over half of K–12 teachers reporting felt reluctant to integrate technology overall into literacy instruction. This lack of internet-based technology use at the local

level, in comparison to national levels and when considering the potential of emerging internet-based technologies to improve student learning in literacy (Lisenbee, 2016; McDaniels, 2018; Mundy et al., 2012; NCES, 2019), points to a clear need for increased resources, support, and guidance for literacy teachers regarding the use of internet-based technology in literacy instruction at the local level.

Section 3: The Project

Introduction

In this section, I provide a detailed description of my project designed to address the need to strengthen teachers' acceptance and use of technology in the ELA classroom. Teachers need the background knowledge and support through the theories and research of Safitry et al. (2015) and Drossel et al. (2017), which support the effective use of digital tools and technology strategies during reading instruction. The findings of this study informed the following three research questions:

RQ1: How are ELA teachers using internet-based technology in the ELA classroom?

RQ2: Which internet-based technologies do ELA teachers select for integration into the ELA curriculum?

RQ3: What are the barriers ELA teachers face when they use internet-based technology and integrate internet-based technology into ELA instruction?

Findings indicated that most teachers interviewed are not using internet-based technology in literacy instruction frequently or to a scope beyond basic Google Suite applications. Results also indicated that most teachers interviewed did not feel they had the skill, knowledge, or support necessary to integrate internet-based technologies into literacy instruction, and they even felt apprehensive about learning or adopting new technologies because of perceptions they may be difficult to learn or act as a distraction to students. Therefore, these findings not only aligned with existing research indicating a lack of use of internet-based technology in literacy instruction but also provided new

evidence, clarifying that participants interviewed felt most comfortable using G-suite applications rather than more complex literacy learning applications. Findings also provided new learning about why ELA teachers may not be using technology, such as they felt uncomfortable learning new technology tools or believed technology to be a distraction to students. This indicates a need to provide better education and support resources to teachers at the local level, informing them of how specific internet-based technologies may be relevant to their careers (Knowles, 1978) to improve literacy instruction and learning. Additionally, this study's findings clarify the need to provide education and support in how to use the technology effectively, and where to seek guidance if issues are encountered.

In response to the need for this improved teacher-oriented technology education and support, I describe the proposed project, as a deliverable of the study's results, in this chapter. I designed the project proposed herein to directly address the need found through this study's findings, which is a need for increased education, support, and resources teachers can access in order to increase knowledge, skill, and support of and for technology use in literacy instruction. Through this project, I aim to overcome the barriers to technology use teachers described in the results and enable internet-based technology to be used more frequently, widely, and positively in literacy instruction at the local study site. The project will be broken into logical components addressing specific areas of the findings. All components of the project, including the evaluation report, the curriculum plan, the professional development materials, implementation, and the policy plan, are detailed in Appendix A.

Rationale

I chose the project described based on the literature reviewed, which indicated a need for increased use of internet-based technology as an effective means to improve literacy instruction in ELA classrooms (Lisenbee, 2016). I also chose the project based upon this study's findings that evidenced the problem at the local study site—a lack of integration of technology use into literacy instruction. Researchers have mirrored this local problem on national levels (Beucher et al., 2019; Purcell et al., 2013). I chose the project as a means to overcome the barriers to use the participants described, such as a lack of motivation, a lack of technology knowledge or skill, a lack of supportive resources, and their perspectives towards technology, such as the belief that it could just be a distraction for students. Therefore, this project's four curriculum components are (a) technology in education—why use it? (b) technology skill and use case; (c) overcome classroom obstacles directly addressed; and (d) easily access support, directly address these barriers, and facilitate increased positive internet-based technology use in literacy instruction.

The project will be significant in developing methods that motivate and encourage teachers to use internet-based technology in literacy instruction on a more frequent basis and in a more far-reaching manner. The project will assist educators in strategically overcoming barriers in order to enhance Title I educational initiatives, which work to alleviate poverty. Title I educational initiatives work to alleviate poverty by using educational improvements targeting underprivileged children in order to expand children's academic and economic facilitators. This professional development program,

increasing teachers' ability to use internet-based technology to improve literacy instruction, potentiates the alleviation of the local area's educational achievement gaps by increasing the instructional capacity of ELA teachers and thus the literacy skills of students—particularly students from socioeconomically disadvantaged backgrounds or students who experience developmental and learning difficulties (Escueta et al., 2017; McDaniels, 2018; NCES, 2019).

As described in the introduction of this dissertation, successful efforts to improve the literacy instruction of students from disadvantaged backgrounds could be helpful in reducing disparities that exist in the wider society between social classes, ethnic communities, and regional areas. Students supported by greater technology integration may be able to complete their K–12 curriculum in a way that leaves them more prepared to pursue higher education or employment. The general levels of literacy and education in wider society may consequently increase, potentially contributing to a more competent workforce. Overall, this project may impact ELA teachers at the local study site by equipping them with the knowledge, skills, and resources needed to more frequently, effectively, and comprehensively use internet-based technology to its greatest instructional potential, so ELA teachers are more well-equipped to effectively instruct in literacy instruction.

The project proposed herein may also promote social change by equipping ELA teachers locally with technological tools to improve the efficacy of literacy instruction. Increased understanding of and use of internet-based technology could improve future literacy instruction and contribute to social change by helping to close technology-

centered pedagogical and instructional gaps. Closing such gaps may help to alleviate education-based disparities in a rural, Southern school, thereby making an original contribution to improving the local economic and social environment. In helping to close this gap, this project and its professional development programs may contribute to social change initiatives by increasing ELA teachers' reading and writing instructional skills, so teachers may advance in their professional positions. Thus, this may contribute to alleviating poverty in the local area.

Furthermore, by supporting more ELA teachers to integrate internet technology more effectively and frequently in literacy instruction, this project has the potential to address the educational achievement gap experienced by students from low socioeconomic backgrounds by promoting increased technology use as a means of improving student outcomes. The failure to use internet-based technology in literacy instruction is common in school districts serving a population that experiences socioeconomic disparities, partially due to the lack of training received by teachers in these school districts, as compared to teachers in districts where these disparities do not exist (Soobin et al., 2015). Barbaro et al. (2016) supported the validity of this observation when they identified a direct correlation between poverty experienced by students and their wider community, the level of academic training and professional experience possessed teachers, and the use of internet-based technology in classrooms. Thus, failure to use internet-based technology effectively in literacy instruction can have a major impact on student outcomes, further exacerbating the gap in student achievement affected also by socioeconomic status (Barbaro et al., 2016; Soobin et al., 2015).

Scherer et al. (2018) proposed that a frequently encountered difficulty within the context of such educational environments is the failure of teachers to appreciate the value of internet-based technology in literacy instruction. Chun et al. (2016) found that internet-based technologies may improve the efficacy of language learning and teaching techniques. ELA teacher motivation is an essential aspect of implementing effective literacy instruction (Scherer et al., 2018). Overall, a gap in practice exists between researchers who recommend the integration of technology into the ELA classrooms and the ELA teachers' hesitation to use technology. This project may contribute to closing the gap between some ELA teachers' use of internet technology and research best practice recommendations by uncovering what barriers to internet-based technology use ELA teachers may face, so educators may better equip ELA teachers to use internet-based technology in literacy instruction.

Review of the Literature

The literature I review in this section relates to the problem of literacy teachers' ineffective use of internet-based technology tools, which is a problem that was widely recognized in a meta-analysis of over 20 studies documenting teachers' difficulties in following best practices to integrate internet tools into literacy instruction (Soebari & Aldridge, 2015). The literature also connects the findings of this study to Knowles's (1978) theoretical framework and to a justification for the implementation of the project proposed herein and developed based on the study's findings. Hence, the findings of this study will be discussed in a manner that is integrated with the literature reviewed in this section, so as to logically relate literature findings to the study findings. I will discuss the

literature and findings in a logical, organized fashion, respective to each of the themes demonstrated by the study results. I conducted a search of the literature using the following search engines: Google Scholar, JSTOR, EBSCO, Cochrane Database, and the National Center for Education Statistics. The following search terms were input into each search engine: *education, literacy, instruction, ELA, internet-based technology, learning, use, skill, knowledge, support, barriers, facilitators, perceptions,* and *professional development programs.* Search results averaged 1,200 per search engine, and 378 once narrowed down to "after 2017." I included literature in this discussion on the basis of date of publication (with more recent favored), relevance to the topic (problem and research question), and credibility (peer-reviewed favored).

Despite the increasingly widespread availability of technology to classrooms and teachers, many teachers continue to struggle with and remain resistant to integrating internet-based technology in literacy instruction practices because of the barriers faced, such as beliefs about and perceptions towards technology (Bristow et al., 2020; Karafylli & Maligkoudi, 2021; Roblin et al. 2018; Safitry et al. 2015; Zhang, 2020). Such research directly relates to this study's findings, indicating that many teachers interviewed felt hesitant and/or reluctant to technology use due to perceptions that it is either not useful or needed or could even be distracting and detrimental to student learning. Similarly, research suggests that secondary school ELA teachers often encounter difficulty integrating technology into instructional processes, indicating the clear need for increased support and education (Bristow et al., 2020; Karafylli & Maligkoudi, 2021; Soebari & Aldridge, 2015; Voogt & McKenny, 2017; Zhang, 2020).

Knowles's Theory of Adult Learning

Knowles's (1978) theory of adult learning assumes that teachers are adult, self-directed learners and will, therefore, be motivated to learn or adopt new practices they see relevant to their personal lives and/or careers. Following this assumption, the Knowles theory posits that ELA teacher preparation ought to account for a broad range of learner backgrounds and experience with internet technologies. The assumption that adult learners will only learn what is perceived as personally or professionally relevant is supported by this study's results, which indicated that many participants expressed the perception that technology is simply not necessarily needed nor particularly relevant to literacy instruction. Some expressed, for instance, that their teaching styles were "fine as is" or that they "didn't understand how it [technology] would be useful." Assuming that ELA teachers prepare to learn and are motivated to learn as a result of understanding how a particular skill or technique is useful and relevant, the results of this study, in conjunction with Knowles's learning theory, supports the need for a professional development program that helps ELA teachers see and understand the relevance, appropriate use of, and potential of using internet-based technology in ELA instruction.

Merriam and Bierema (2013) linked Knowles's (1978) theory to practice, describing that adult learners need to be able to learn in a way that allows them to adapt learning specific to social issues, professional contexts, and personal needs. The theory implies that learning needs to be relevant. Hence, professional development programs need to be relevant to practice (Merriam & Bierema, 2013). For this reason, in the professional development program proposed herein, I address the specific challenges and

barriers described by participants in the results of this study. Adult learners are often more receptive to learning that is not only directly relevant and applicable but can be tailored to specific professional needs, such as changing curriculum content or specific student needs (Knowles et al., 2020; Wildflower & Brennan, 2011). Therefore, the proposed program will equip teachers with not only potential technologies and how those technologies can be useful for special needs students or delivering various curriculum content but also with particular use case knowledge. I discuss the following literature in relation to each of the themes uncovered in the study's findings, which also inform and support the proposed program. The literature serves to justify and support the proposed program.

Literature Related to Themes

The themes describing the meaning of this study's findings include:

- Generational differences are perceived to impact technology use and comfort levels;
- Motivation levels impact technology use;
- Lack of knowledge and skills impact technology use, skill, use case, and comfort of use;
- Lack of support is a barrier to technology use;
- Beliefs about technology impact how and whether or not technology is used in literacy instruction; and
- Google Suite and videos are the primary internet-based technologies used by participants in instruction.

All of these themes point to a need for more education, resources, support, and guidance assisting ELA teachers in incorporating internet-based technology into literacy instruction. This section describes what literature was found that related to, and how it related to, each of the themes found in the results.

Generational Differences are Perceived to Impact Technology Use and Comfort Levels

Multigenerational workforces are now considered commonplace and normal across a variety of industries (Knowles, 1978; Lowell & Morris, 2019; Strychnou, 2018; Taipale et al., 2017). Despite the increasing prevalence of multigenerational workforces, the comingling and collaborating of members of different generations in workplaces can create challenges as a result of differing age-related life experiences, knowledge, backgrounds, abilities, experience levels, and age-related values (Lowell & Morris, 2019). Generational differences do not automatically imply such gaps but can mean these gaps are present. One such area in which these discrepancies can become apparent is technology use. Digital natives of Generations Y, Z, and even of Generation X may be more familiar with internet-based technology use due to growing up alongside it and having more opportunities to practice using technologies, thereby integrating them into everyday life and seeing their practical application and use (Taipale et al., 2017). Without this opportunity to easily integrate technology into everyday tasks and living, senior generations, such as the silent generation and baby boomers, may not understand the usefulness of internet-based technologies to the degree younger generations understand them. Moreover, senior generations may not be as comfortable using or likely to use such technologies professionally, not having seen and experienced their applicability as much

as younger generations have (Knowles, 1978). However, providing professional development training programs in technology has shown, in multiple instances, to increase technology users' confidence, skill, capability, understanding of use or relevance, and the likelihood of continuing use across generations (Lowell & Morris, 2019; Strychnou, 2018; Taipale et al., 2017).

Motivation Levels Impact Technology Use

According to research indicating internet-based technology use in literacy instruction, technology has the potential to motivate students to learn, while also improving student outcomes (Copriady, 2014; Knowles, 1978; OECD, 2020a). However, the uneven use of technology in literacy instruction indicates many teachers do not yet see this value. Teachers who do not see the value may not be motivated to incorporate technology into literacy instruction (Knowles, 1978; OECD, 2020b). Research has also shown motivation to be a significant mediating variable between readiness regarding internet-based technology application in instruction and effective teaching and learning across subjects (Copriady, 2014). It is recommended that educational leaders consider teacher motivation as a factor influencing technology in instructional use (Copriady, 2014). Based upon Knowles's (1978) theory, by educating teachers on the usefulness of technology, it is likely teachers at the local setting who (according to this study's findings) exhibit a lack of motivation to use technology in literacy instruction, and teachers may be more likely to integrate internet-based technology into instruction in the future.

Lacking Knowledge and Skill Impacts Technology Use, Skill, Use Case, and Comfort of Use

The study's findings indicated that many participants interviewed were reluctant to use internet-based technology in literacy instruction because they did not feel they had the skill or knowledge to use it appropriately, were not comfortable using it, were worried it might cause students to be distracted, and/or did not understand what they would use it for. Cullen (2018) described how many educational leaders implement new technology applications for classroom or instructional use; overcoming teacher objections and reluctance to use the technology is often a primary challenge. Research indicates that often, educational leaders will avoid such reluctance, unknowing how to overcome it or how to face the difficulties of organizational and interpersonal change (Cullen, 2018). Innovators are those who adopt change easily, and reluctant adopters often need additional coaching, support, and direction (Cullen, 2018), which is precisely why a professional development program empowering teachers at the local setting with the skills and support they need to use internet-based technology in literacy instruction could be especially helpful in overcoming barriers of lacking knowledge, skill, or support. The need for such technology-centered professional development programs is prevalent. Li et al. (2019) noted that despite increasing professional development programs, very few are designed to help teachers adopt new technologies and even fewer target literacy instructors.

Lack of Support is a Barrier to Technology Use

Similar to the way in which lacking knowledge and skill of the use and use case impact technology use, lack of support also impacts and minimizes literacy instructors' technology use at the local setting. A lack of even basic computer literacy is a barrier to internet-based technology use among many literacy instructors, which is unfortunate, considering that research from the past decade also indicates internet-based technologies, such as Accelerated Reader 360, instructional modules, and interactive reading and writing applications, are shown to statistically improve student outcomes (Bakić-Mirić & Gaipov, 2015; Chambers, 2003). Moreover, professional development programs offering support in terms of how to use basic internet-based technology resources, technical on-call assistance, or peer-to-peer teacher learning support groups are shown to improve the technology skills of literacy teachers (Bakić-Mirić & Gaipov, 2015). Clearly, a gap between research and practice exists, in that research indicates the usefulness of both technology and technology support programs for literacy teachers and the overall lack of these resources for literacy teachers. However, such supportive resources and supporting professional development programs are lacking, as demonstrated by this study's findings and research (Bakić-Mirić & Gaipov, 2015; Chambers, 2003; Copriady, 2014; Cullen, 2018; Li et al., 2019).

Beliefs About Technology Impact How Technology is Used in Literacy Instruction

Study results revealed that teacher perceptions of technology, including perceptions of usefulness, whether or not it may be distracting to students, and whether or not it will be difficult to learn, impact how and how much literacy teachers use

technology in instruction at the local study site. Kim (2020) explored K–12 teacher beliefs, perceptions, barriers, and needs for support in using internet-based technology in the classroom, finding that teachers' preconceived notions and/or negative biases about technology significantly impacted their use and made the adoption of internet-based technologies more difficult. For instance, if teachers perceived those technologies would detract from learning, be a distraction to students, and make the classroom more difficult to manage, teachers were often reluctant to adopt or even learn new technologies. Additionally, teachers' beliefs that they could instruct better than a technology also hindered adoption. Many of these negative perceptions towards technology use were apparent in teachers who had never used internet-based technologies in instruction and who had not received support and training (Kim, 2020). Despite such teacher perceptions, technology advancements have created changes in what is expected of K–12 teachers (Cotton, 2017). Teachers are more often being expected to use technologies in the classroom despite not being taught how or feeling comfortable using these technologies (Cotton, 2017). Digital internet-based tools can provide more personalized learning experiences for students than many teachers can accomplish efficiently and manually, especially in today's learning environment characterized by diversity, special needs students, and English second language learners (Mercader & Gairin, 2020). Increased support and education helping teachers to understand the usefulness and use cases of various internet-based technology tools could provide needed support for teachers' effective technology and overcome these barriers of negative perceptions (Cotton, 2017; Dilekli & Tezci, 2016; Kim, 2020).

Google Suite and Videos are the Primary Internet-Based Technologies Used by Participants in Instruction

Google Suite applications, such as Google Docs and email, in addition to YouTube videos, were the most widely used internet-based technologies by participants interviewed. However, many other technologies exist and are being developed that might improve teachers' instructional efficacy and efficiency and student learning outcomes (Cotton, 2017; Dilekli & Tezci, 2016; Kim, 2020; Mercader & Gairin, 2020). When considering the wide variety of technologies evolving and available today to assist student learning and literacy instruction, it is clear that teachers and students at the local setting may benefit from having the education, skills, support, and knowledge necessary to expand technology use beyond the limited scope of a few Google applications.

Program Developments

The study's findings and literature reviewed herein point to a need for increased professional development resources providing internet-based technology use support and guidance to ELA instructors at the local setting. Such training programs might inform teachers of how to use new technologies they are not yet comfortable with within the most effective ways, while minimizing and mitigating risks of increased technology use, such as the risk of students using devices in class and becoming more distracted by social media or non-class-related applications (Fashami, 2020; Simamora & Andika, 2019). The training program proposed recognizes such risks that might come with increased technology use in instruction, especially in cases in which students are provided with their own devices, and takes measures to minimize risks to increase learning and

outcomes. Risk minimization measures, for instance, might include putting locks or restrictions on students' classroom-permitted devices that prohibit the use of personal social media accounts (Fashami, 2020; Gallegos et al., 2018).

Effective internet-based technology integration often involves integrating a technological application into one or more areas of instructional approaches and/or using that technology in an interactive way (Katzel, 2021; Lambert & Lane, 2004). For instance, more effective than using videos for lecture and demonstration purposes would be providing students with the chance to use interactive learning modules that assist with literacy instruction (Lambert & Lane, 2004), while also computing students' interactive progress and results and providing prompts or updated material according to student progress in a way that is individually tailored (Herrero et al., 2018; Sabuncuoglu, 2020). The development of AI-powered programs that are able to adapt and learn based on student feedback and engagement aids this process of tailoring learning and instruction to individual student needs, thereby allowing the teacher to focus on high-level general instructional tasks and particular special needs students, without having to exhaustively cater to every diverse student's needs—especially in literacy learning environments (Katzel, 2021; Sabuncuoglu, 2020).

Technology developments continue to advance at an exponential rate. Following the .com bubble during the late 1900s, internet-based technologies began making their way into educational settings at an increasing rate—and a rate that can undoubtedly be difficult for reluctant adopters and teachers without prior technology experience to adjust to (Whitaker, 1996). The exponentially increasing rate of technological advancements,

coupled with the difficulties change presents, further warrants the support of professional development programs helping literacy teachers navigate such changes for the best possible instructional and learning outcomes. An ideal program would consider aspects influencing how literacy teachers use internet-based technology in literacy instruction, as well as the barriers they face, including generational differences; motivation levels; lack of knowledge, skill, or comfort of use; lack of technical support; and beliefs about technology. The project proposed in this dissertation comprehensively addresses these factors.

Project Description

The project described in this section aims to address the barriers to technology use faced by ELA teachers at the local setting, as identified through the findings. This project relates the research questions this study sought to answer, including how ELA teachers are using technology in instruction, what technologies they are using, and barriers to technology use faced. The project aims to increase the use of internet-based technology in beneficial ways that optimize literacy instruction and feedback between students and teachers by increasing teachers' motivation to use and skill related to using internet-based technologies in the classroom. Guided by the assumption of Knowles's (1978) adult learning theory that adult learners (in this case ELA teachers) are motivated to learn what they perceive as relevant to career or personal life, this project is designed to increase ELA teachers' motivation to use internet-based technology in literacy instruction by educating teachers on how internet-based technology is relevant to the career of literacy instruction and how it can improve communication with students and student learning.

The proposed project includes the following primary curriculum components, which will be addressed during an 8-week timeframe.

- Technology in education: Why use it?
- Technology skill and use case.
- Overcoming classroom obstacles directly addressed.
- Easily access support, directly address barriers, and facilitate increased positive internet-based technology use in literacy instruction.

These components are intended to result in the following outcomes.

- Increase ELA teachers' confidence of use, knowledge, and skill of use in internet-based technologies for literacy instruction at the study site.
- Expand the types of internet-based technologies used in literacy instruction by ELA teachers at the study site.
- Increase the prevalence of use of internet-based technologies used in literacy instruction by ELA teachers at the study site.

The proposed professional development project at the local study site will require the following high-level resources.

- A third-party vendor skilled and specializing in technology tutoring and training. This could be a small business, such as Everhuman, specializing in training companies and individuals with technology use skills and empowering them to use technology with ease, simplicity, and knowledge. A small-scale vendor may be appropriate so as to not involve unnecessary levels

of bureaucracy and to provide teachers with a personalized learning experience.

- Software and hardware resources, as recommended by the third-party vendor. This will include software and hardware the local study site plans on implementing into literacy instruction so that teachers can use and learn those technologies.
- A neutral meeting facilitator to collect feedback from teachers in evaluation and review meetings, while maintaining a psychologically safe environment in which teachers feel safe to share. A meeting facilitator and/or note taker will not include any members of institutional leadership or supervisors.

Supportive resources for the project will include the following.

- A functional help desk application in which teachers can easily submit help tickets when using a particular internet-based technology or platform they are learning.
- Access to a chatroom online so that teachers can become accustomed to using online communication tools and chatrooms.
- A bi-monthly support meeting group that teachers will have the choice to attend in-person (or on Zoom, covid permitting). This group will be designed to provide time for Q&A and discussion and will also have a neutral facilitator present.

Potential barriers to the program's implementation.

- Funding resources, considering the school's relatively small size and socioeconomic setting.
- Teacher attitudes and beliefs towards technology that may initially inhibit them from taking the first step of involvement.

Possible solutions to these barriers.

- Grant proposal writing allowing the study site to receive state and/or federal funding resources.
- Incentives for program participation, such as extra paid time off or gift cards.

The project, if approved, will be implemented in January of 2022, according to the following timetable and related steps.

December 2021: Vetting and securing resources.

January 1, 2022: Announcing project to teachers and providing incentives.

January 15, 2022: Beginning curriculum of the project, including supportive resources.

March 15, 2022: Begin project evaluation.

March 30, 2022: Project evaluation analysis and conclusions.

The proposed project will encompass the following roles and responsibilities.

- School board of directors: The board will be responsible for reviewing and approving this proposal, communicating plans for implementation to school administrators, and evaluating the outcomes of the program. The board will also be responsible for drafting grant proposals and overseeing logistical aspects of the program in collaboration with school administrators.

- ELA teachers: Teachers' participation in the program at the study site will contribute to the program outcomes and efficacy.
- School administrators: Administrators at the study site will be responsible for communicating the action steps, timeline, rationale, and program potential to teachers. Administrators will also be responsible for vetting the third-party vendor and meeting facilitator in conjunction with the school board, overseeing budgeting, funding, and logistical organization of the program in collaboration with the board.
- Third-party vendor: This vendor will be used to teach technology use over a series of 8 weeks to the ELA teachers at the study site. An example includes the business Everhuman.
- Neutral facilitator: An identified neutral third party will be available to attend evaluation meetings, take notes, and collect feedback in an unbiased manner.

Project Evaluation Plan

This program will be outcomes-based. An outcomes-based approach is most appropriate for this program that seeks to meet the following objectives.

- Increase ELA teachers' confidence of use, knowledge, and skill of use in internet-based technologies for literacy instruction at the study site.
- Expand the types of internet-based technologies used in literacy instruction by ELA teachers at the study site.
- Increase the prevalence of use of internet-based technologies used in literacy instruction by ELA teachers at the study site.

Goal-based programs are appropriate in cases in which a program aims to result in clear, measurable, ongoing objectives that work to carry out our practice. In contrast, goals define benchmarks that would be met and surpassed, such as the number of students graduating during a certain year, the number of teachers hired, or a benchmark of literacy learning outcomes achieved. However, because the objectives defined relate to outcomes that affect how teachers' ongoing instructional methods will change, an outcomes-based approach to evaluation is most effective. The evaluation method specified will measure and evaluate the outcome of the program according to these three objectives or measurable outcomes and the corresponding methods of measuring these outcomes: (a) increase ELA teachers' confidence of use, knowledge, and skill of use in internet-based technologies for literacy instruction at the study site; (b) expand the types of internet-based technologies used in literacy instruction by ELA teachers at the study site; and (c) increase the prevalence of use of internet-based technologies used in literacy instruction by ELA teachers at the study site.

Increase ELA Teachers' Confidence of Use, Knowledge, and Skill of Use in Internet-Based Technologies for Literacy Instruction

I will measure this outcome using the scale developed by Brush et al. (2008). Though the scale is dated, it is nonetheless appropriate because it measures teachers' skills, beliefs, and barriers; therefore, it will be effective in evaluating whether or not the program has been effective in minimizing the skill- and belief-based barriers identified through the study findings. I may also qualitatively analyze data from interviews and

focus groups (facilitated by a neutral third party) for themes, similar to how data were collected and evaluated within this study.

Expand the Types of Internet-Based Technologies Used in Literacy Instruction by ELA Teachers

The program aims to introduce teachers to and train teachers in using additional technologies other than those they are currently using (beyond Google Suite and YouTube) and educate teachers as to the purpose of these programs to motivate adoption and integration (Knowles, 1978). Accelerated 360 is one such program.

Increase the Prevalence of Use of Internet-Based Technologies Used in Literacy Instruction by ELA Teachers

Increasing the prevalence of use refers to increasing how often ELA teachers at the study site use new internet-based technologies in literacy instruction. Data relating to the outcome of the program will be collected through interviews and an analysis of district training plans and meeting minutes in the same way that data for the study was collected. This will provide the researcher with data that may be compared to this initial study's data to evaluate any changes in the way teachers integrate and use technology in literacy instruction pre- and post-project.

Stakeholders

Primary stakeholders involved in this project include ELA teachers, students, parents, the school board, and school administrators. ELA teachers will have a vested interest in the project due to incentives offered for participating. Teachers will also be incentivized by the project's prospects to improve instructional efficacy and student

learning outcomes, reflecting plausibly on teaching success. Students may have a vested interest in the program because it will provide them with new, interesting, engaging, and fun ways of learning more effectively and experiencing greater achievement. Similarly, parents' interest in the program will be rooted in a desire to see their children succeed in literacy learning. Finally, the board's and school administrators' vested interest in the program will be rooted in a desire to see an overall school performance increase and succeed and remain competitive in today's educational institutional environment and student literacy learning outcomes.

Project Implications

By contributing to filling the gap between technology's possibilities and the use of internet-based technologies by ELA teachers, researchers may use this study to continue examining the gap between literacy instruction efficacy and learning at the local study site. In doing so, this project could serve as a relevant, useful example of the positive potential such programs helping teachers become better prepared to use internet-based technology in literacy instruction may have when implemented in national contexts. By contributing to improving ELA teacher instructional efficacy and student literacy learning, the program may also serve to improve student outcomes and ultimately student prospects in the economic workforce after graduation, since literacy proficiency is an important aspect of workforce success. Such implications may contribute to minimizing socioeconomic gaps in this rural, Southern state.

Section 4: Reflections and Conclusions

Project Strengths and Limitations

The project proposed encompasses several strengths and limitations. The project is strong in its ability to efficiently implement training effective for evaluating whether that training shifted ELA teachers' confidence towards using internet-based technologies in literacy instruction—and most importantly, whether the training shifted teachers' perspectives towards technology use in literacy instruction. Hence, this project will be useful in gaining a high-level evaluation of the relevance and efficacy of this general type of technology training related to Docebo, Accelerated Reader 360, and Blackboard. However, the project may not comprehensively evaluate all teachers' potential questions and concerns since it is limited to a smaller pool of instructors. Additional questions or barriers to use may arise, such as difficulties using various product features. Such issues may only arise through the course of implementation on a wider scale.

The 8-week program exhibits the strength of providing time for adoption and addressing barriers and questions that teachers may encounter when implementing and using these technologies during actual instruction. A weakness of the 8-week program is its cost. Another weakness is that the 8-week program is limited to 8 weeks. Thus, while supportive resources are provided, it does not completely account for continuing questions, barriers, or concerns that may arise, nor does it account for application and software updates that may be made to each of the three programs. To address this weakness, school personnel recommended that this type of program be offered as an ongoing professional development program for onboarding ELA teachers at the local

study site or at sites facing similar issues, especially, according to Cullen (2018), many teachers, nationwide, are apprehensive to adopt and use new technologies. Ongoing programs may incorporate training related to the latest software application versions and/or newly emerged software, as relevant and most appropriate to literacy learning, to offset the same problem from reoccurring in the future as technology evolves (Lisenbee, 2016; Mundy et al., 2012).

A strength of the 8-week program is that it helps participants overcome the barrier many seniors (baby boomers) face of a lack of technology familiarity and comfort of use, as noted by Lowell and Morris (2019), by approaching technology use from a novice level. The program also is strong in its provision of opportunities to practice what is learned interactively, to ensure understanding, to allow for troubleshooting, and to allow those who may be less comfortable with the technology to gain skill through kinesthetic learning. In doing so, this program is strong in its ability to demonstrate to learners how technologies will be useful in learners' professional lives, thereby incentivizing increased use (Copriady, 2014; Knowles, 1978). This training program offers increased peer-to-peer support for learning through group discussion and practice, which are practices shown to increase adult learning and retention, and more specifically, the technology skills of literacy teachers (Bakić-Mirić & Gaipov, 2015). Such technology tools are shown to increase literacy instruction (Bakić-Mirić & Gaipov, 2015; Chambers, 2003); yet, many teachers are apprehensive to use such technologies (Cullen, 2018), indicating a clear relevance and need for this program. This deliverable provides a substantiative review of the 8-week project.

Recommendations for Alternative Approaches

Alternative approaches to implementing an internet-based technology educational program for ELA teachers include (a) lower budget approaches focusing on only one type of software, such as Accelerated Reader 360; (b) a technology education program providing only background educational information to educators on the relevance of technology without the actual hands-on use of actual software (though this would provide useful information, it would likely be less useful in producing results because teachers would end up with knowledge but no tools for application); and (c) the provision of internet-based technologies without an in-school educational professional development program. In the case of the third approach, teachers may be required to use the adopted technologies, but would be directed toward an external learning application, resource, or class. This approach could be designed to minimize the cost to the school, since the school would merely cover the costs of an external class for teachers rather than implementing all technologies, vendors, and support resources internally, but it would likely provide less motivation to teachers to follow through with training and to use the new technologies. Therefore, I designed the approach described herein to be most effective, not only in educating teachers in response to the gaps and needs found through research at the local level but also to most effectively incentivize and motivate teachers to learn and adopt technologies for the betterment of their careers, in accordance with Knowles's (1978) theory of adult learning.

Scholarship, Project Development and Evaluation, and Leadership and Change

Designing and developing this project yielded growth and learning and presented challenges. As a practitioner, educator, and researcher, I learned about the process of writing a dissertation proposal but, more specifically, the process of writing a graduate-level research project intended to inform a specific project addressing and responding to a specific need at a local site. Through this process, I learned how educators can understand state and nationwide educational issues more effectively by first evaluating local sites and understanding issues at a local level. Because national educational issues are so vastly layered and complex, often more useful is to begin to understand and address educational gaps at a local level, which I did in this project. In doing so, I strengthened my educational leadership abilities through communicating with my committee and with my school board, administrators, and colleagues. I fulfilled the role of a researcher and the director of the program I developed and learned more specifically about how ELA teachers in my school struggle to use technology in the classroom. Fulfilling this role provided me the challenging, yet rewarding, opportunity to speak one-on-one directly with ELA teachers at the study site to understand their beliefs toward and perspectives of technology—a topic that researchers describe as being characterized by significant negative perceptions and beliefs (Kim, 2020). Kim (2020) described research highlighting how K–12 teachers' beliefs and attitudes towards technology are often negative and negatively minimize use. While this correlation is not proven as causative, a clear link exists between lacking technology use, gaps in use and efficacy, and negative teacher perceptions of technology (Kim, 2020).

However, the educational landscape is changing just as technology is evolving, which means that in many districts, new expectations, requirements, and standards are being placed upon teachers (Cotton, 2017). This increased pressure can sometimes widen the gap between teachers' capabilities and confidence and what is expected of them (Cotton, 2017; Kim, 2020). Being in a researcher and educational leadership role, I was able to listen firsthand to teachers' descriptions of the challenges and barriers they faced, many of which seemed influenced by negative preconceived notions of what technology is and how it affects students in the classroom. Before the program, many teachers seemed to see technology only as a distraction; whereas, after the simple 4-day program, many teachers in the focus group expressed understanding of how the programs reviewed and taught could be helpful to literacy instruction and student learning outcomes. With learning environments increasingly characterized by English second language learners and diverse student bodies (Mercader & Gairin, 2020), by conducting this research and designing this program, I gained insight into how technology use in literacy instruction can continue to bridge gaps teachers alone are not able to address when teaching large, diverse student bodies. This program reinforced the importance of technological literacy and use among ELA teachers not only at the local study site but nationwide, which naturally leads to a discussion of the overall importance of this work.

Reflection on Importance of the Work

The research I conducted to inform this project was to design a project that was specific and relevant to the local need regarding the gap in technology use among ELA instructors in literacy instruction. The research allowed this program to present new

technologies to teachers and teach them about those technologies and to specifically teach ELA instructors why the technologies are useful and relevant to their careers—a motivating factor in learning (Knowles, 1978). The program allows considerable time providing teachers with ample practice opportunities through which to learn how to use the software to respond to teachers' need for increased confidence and skill of use. Thus, the research was imperative to designing an effective program.

The 4-day program was critical to evaluate the overall approach's efficacy from a high-level perspective before investing additional funds, energy, and planning resources into the larger 8-week program. The initial 4-day program and the 8-week program are both important in providing a framework for educators at the local site to continue implementing an internet-based technology education program for ELA instructors on an annual basis and for new instructors that are onboarded. This is important in the sense that a single, one-time program would not sufficiently close the gap in technology use identified at the local study site. Software application upgrades often happen annually, if not more frequently, and new technologies are always emerging. Hence, a one-time program would not keep existing teachers up to date, and it would leave them with less motivation to continue learning on their own about new software versions and types, than an in-school continuing education or professional development program integrated into teachers' job framework would. Additionally, a one-time program would not address new teachers as they are hired, ensuring that they are also familiar with and proficient in the specific technologies purchased, adopted by, and implemented at the local site. For this reason, an ongoing program offered annually and based upon this program's curriculum

framework provides an ongoing, useful, relevant, and effective means by which to continue bridging the originally identified gap in technology use and better preparing ELA teachers at the local site for effectively adopting internet-based technology in literacy instruction.

For this same reason, the framework of this locally implemented program may be adopted, tested, implemented, and evaluated at other schools or institutions facing similar issues with uneven or a lack of technology adoption and use among instructors. In this way, the program developed may serve as an action research item other schools could implement and evaluate for efficacy at other local sites. Future research may evaluate technology integration and use in literacy instruction at other schools and compare findings across geographic sites or regions. Additional research may also evaluate trends in technology use, qualitatively and/or quantitatively, among ELA teachers according to grade level. This would expand upon the research conducted herein and provide useful information according to grade levels and geographic regions that experience the most gaps in effective technology use in literacy instruction. By being informed of such gaps over a more widespread area and across educational geographics, similar program frameworks could be adopted, implemented, and evaluated for efficacy as a means to improve literacy instruction and optimize language and literacy learning across the most in-need geographic regions of the United States and within the most in-need grade levels across the nation.

By contributing to improving ELA teacher instructional efficacy and student literacy learning, this program may improve student literacy learning outcomes and thus

student workforce prospects after graduation, considering that literacy proficiency is an important aspect of economic success. These implications would likely contribute to minimizing socioeconomic gaps in this Southern state. If similar programs were to be adopted in other geographic regions and among other student demographics in response to future research conducted, similar gaps in literacy instruction may be bridged. The implications of continued research and framework implementations may result in the continued closing of literacy learning gaps and socioeconomic gaps in other parts of the nation.

By contributing to alleviating educational disparities in this rural, Southern state, this program, its continued development, adoption, and use, and similar programs may make original contributions to improving local economic and social environmental factors of this rural, Southern state. These contributions will continue to contribute to social change initiatives by increasing ELA teachers' literacy instructional skills. This will help teachers accelerate their professional positions while helping students become better prepared to enter the workforce upon graduating, which will aid in alleviating poverty in an already rural area characterized by socioeconomic disparities. Educational achievement gaps present in the area (Soobin et al., 2015) will also be addressed and potentially alleviated by providing means by which literacy teachers may be more effective and students learning literacy may perform better. Such assumptions are supported by research evidencing positive correlations between high levels of poverty and low levels of academic professional training and lack of internet-based technology use in literacy instruction (Barbaro et al., 2016; Scherer et al., 2018; Soobin et al., 2016).

Moreover, Chun et al. (2016) found that internet-based technologies may help improve language learning and make teaching techniques more effective, but that ELA teacher motivation is an essential aspect of effective instruction (Scherer et al., 2018). Hence, it is suggested that ongoing and more widespread adoption of such a program in areas of need may alleviate poverty by increasing technology use, increasing professional development training, and achieving the economic impacts described above as a result.

Methodological and theoretical implications of this research and the program designed relate to Knowles's (1978) theory of adult learning. The program design was guided by Knowles's framework, and the efficacy of the program supports and validates the need to motivate teachers to understand the efficacy and career relevance of new tools, programs, instructional methods, or technologies before expecting teachers to adopt them for use in the classroom. Based on this theoretical framework, the programs methodological implications are such that they could change the way educators see and understand professional development training programs. Rather than viewing professional development training programs as merely the delivery of content and knowledge that must be memorized and tested, educators may now understand successful professional development and training as that which not only delivers content but, most importantly, motivates learners to continue learning and teaches learners about how the content delivered is relevant, useful, and in what context it is relevant and useful. Ultimately, such success will result in changed instructional behavior and practices that will improve literacy instruction and learning through the use of widespread and widely available educational technologies (Roblin et al., 2018; Safitry et al., 2015). In this way,

an effective professional development program not only delivers content knowledge but changes the perspectives of learners—something that is needed in the realm of instruction and technology use (Soebari & Aldredge, 2015; Voogt & McKenney, 2017).

Conclusion

This study responded to a gap in technology use in literacy instruction at the local setting, a rural school in a Southern state, indicating that sixth- through eighth-grade ELA teachers were not making effective use of research-supported internet resources in literacy instruction and assessment. In seeking to understand how ELA teachers are using internet resources in literacy instruction, this qualitative explanatory case study explored how teachers are using internet-based technology in the ELA classroom, which technologies ELA teachers select for integration into the ELA curriculum, and what barriers middle school ELA teachers face when they use internet-based technology in the ELA instruction. Findings indicated that most ELA teachers seldom used internet-based technology in literacy instruction. Common barriers to use included beliefs about technology, lack of knowledge, and lack of skill. The professional development program designed in response to the need for increased motivation changed perspective, skill, knowledge, and confidence of technology use at the local study site. It is proposed that this 8-week program covers the three main technologies of Accelerated Reader 360, Docebo, and Blackboard, which can be tailored to facilitate literacy instruction and classroom data collection for diverse classrooms of all learner levels and student needs. The success of this 8-week program could provide a framework for an ongoing professional development program that could be critical in contributing to overcoming

educational gaps and socioeconomic gaps in this rural, Southern state. by bridging literacy instruction and learning gaps at the local study site and inspiring similar, continued research at other sites with similar literacy instruction technology use gaps.

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Appendix A: The Project

This section includes a detailed description of the project designed to strengthen ELA teachers' acceptance and use of technology in literacy instruction at the local site. Internet-based technology tools have been shown to assist with and improve literacy instruction (Drossel et al., 2017; Safirty et al., 2015), yet ELA teachers at the local study site were not using internet-based technology in literacy instruction to its full potential. Hence, the study informing this project sought to understand: (a) How ELA teachers are using internet-based technology in the ELA classroom, (b) What internet-based technologies ELA teachers select for integration into the ELA curriculum, and (c) What barriers ELA teachers face when they use internet-based technology and integrate internet-based technology into ELA instruction.

I developed the project in direct response to this study's findings, which indicated most teachers interviewed are not using internet-based technology in literacy instruction frequently or to a scope beyond basic Google Suite applications. Findings also indicated that most teachers interviewed do not feel they have the skill, knowledge, or support necessary to integrate internet-based technologies into literacy instruction and that they feel apprehensive about learning or adopting new technologies. I designed this project to offer more useful and appropriate education and support resources to teachers at the local level. These resources are specifically intended to inform teachers of how specific internet-based technologies may be relevant to their careers (Knowles, 1978) and improve literacy instruction and learning. The project addresses the need for increased education, support, and resources teachers can access to increase knowledge, skill, and

support of and for technology use in literacy instruction. This project is also designed to overcome the barriers to technology use teachers face, so that internet-based technology can be more effectively used in literacy instruction at the local study site. This appendix describes all project components, such as the evaluation process, report, curriculum plans, implementation, materials, and timelines. Funding contributions for the project were made by state grant funds and through the researcher's private contributions.

Evaluation Report

This program was evaluated based upon outcomes characterized by the following outcome objectives. These outcomes characterize transformations in teachers' ongoing instructional methods. I describe the purpose of the evaluation and the actual outcomes measured.

The purpose of the evaluation was to measure the program's success in achieving the outcomes of (a) increasing ELA teachers' confidence of use, knowledge, and skill of use in internet-based technologies for literacy instruction at the study site; (b) expanding the types of internet-based technologies used in literacy instruction by ELA teachers at the study site; and (c) increasing the prevalence of use of internet-based technologies used in literacy instruction by ELA teachers at the study site. This purpose was based on the research findings of the need to accomplish these outcomes, as findings indicated most ELA teachers interviewed were not using internet-based technology in literacy instruction, beyond the infrequent use of in-class videos and/or basic Google Suite applications. Teachers interviewed often felt they lacked the skill, knowledge, and support necessary to use internet-based technology in instruction more widely, and many

had negative perceptions of technology, fearing it could be a mere distraction to students. Because Knowles's (1978) theory of adult learning posits that adult learners are motivated to learn that which they understand as relevant to their careers, the purpose of this program and measuring its outcomes was to not only teach and measure technology use skills but also to teach the importance and usefulness of internet-based technology use to better motivate teachers to use technology in ELA instruction on their own volition. Evaluation criteria were used as follows, respective to each of the three major outcome objectives.

Outcome 1: Increase ELA teachers' confidence of use, knowledge, and skill of use in internet-based technologies for literacy instruction at the study site

The first outcome was measured using Brush et al.'s (2008) scale measuring the criteria of teachers' skills, beliefs, barriers, and confidence levels in technology use. This evaluation was useful in evaluating the program's efficacy in achieving the outcome of minimizing skill- and belief-based barriers to technology use. Brush et al.'s scale provided quantitative data; whereas, focus group data provided qualitative findings describing changes in teachers' skills, beliefs, and confidence in technology use. Quantitative evaluations of the scale indicated changes in teachers' beliefs and confidence levels in using additional technologies that were covered in the curriculum, such as Accelerated Reader 360. Qualitative findings from the focus group validated and expanded upon the survey results. The following questions were asked during the evaluation focus group, which was held in a school conference room a week after the program's completion:

a. Do you plan to use any internet-based technologies in ELA instruction moving forward? Which, why, or why not?
b. How comfortable do you feel using these internet-based technologies? Why or why not?
c. Do you feel the technologies we learned about could be helpful, neutral, or a hindrance to student learning? Why or why not?

Many teachers in the focus group responded with phrases such as,

It was nice to understand how the internet can be helpful in teaching; I always saw it as a negative distraction, but I suppose there are times when it could help take some work off my plate and help kids understand better.

Another noted, "Well, now that I know how to use [Accelerated Reader] I might actually use it more in class."

Outcome 2: Expand the types of internet-based technologies used in literacy instruction by ELA teachers at the study site.

The second major outcome measured the criteria of teachers' skill levels in using additional technologies beyond YouTube (for videos) and Google Suite and teachers' knowledge levels regarding the purpose of such programs. Educating teachers about the purpose of use was intended to motivate teachers to adopt these tools in literacy instruction. I evaluated the second major outcome through a document analysis review of teachers' curriculum plans and grade-level meeting minutes. Teachers were asked to bring these documents to the focus group evaluation that was held 1 week after the program's completion. All teachers participating in the program voluntarily agreed and

brought these documents. I also asked teachers during the focus group, as indicated by the questions under Outcome 1, which, if any, internet-based technologies they plan to use in literacy instruction and why. The document analysis and responses to the focus group question indicated that 90% of teachers planned on using internet-based technologies and 70% planned on using technologies besides videos and Google Suite, including 360 Learning (most popular, and including Accelerated Reader 360), Blackboard Learning Management System, and Docebo. Most mentioned in response to the focus group question were Learning 360 and Blackboard Learning Management System.

Outcome 3: Increase the prevalence of use of internet-based technologies used in literacy instruction by ELA teachers at the study site.

The third major outcome evaluated the criteria of how prevalently ELA teachers at the study site used new internet-based technologies in literacy instruction following the program. This evaluation was conducted by asking teachers a fourth question during the focus group: How frequently have you used these new technologies (excluding Google Suite and YouTube) during the last week following the program, and how frequently do you plan to use them in the future? Most (six) respondents said they plan to use Learner360 and Docebo weekly. One said they plan to use either monthly. Three said they do not plan to use these technologies. The review of documents confirmed this focus group's answers, as indications of technology use in teachers' lesson plans moving forward aligned with focus group answers.

Most teachers interviewed were not using internet-based technology in literacy instruction frequently nor were they using applications other than Google Suite or YouTube. By training teachers in Learner360, including Accelerated Reader 360, Docebo, and Blackboard Learning Management System as three additional technologies, this program provided teachers with useful skills for expanding their scope of relevant internet-based technology use.

Curriculum Plan

To achieve the three outcomes, I divided the program curriculum into four different learning segments, delivered over a period of 4 days: (a) technology in education: why use it? (b) technology skill and use case, (c) overcoming classroom obstacles directly address, and (d) easily accessing support. The school board of directors reviewed and approved the project proposal and communicated these curriculum implementation plans to the school administrators. All 10 participants who took part in the study have agreed to participate in an 8-week training program and evaluation, as described previously. Results indicated that 70% of participants (seven out of 10) plan to use and did use the new technologies taught, indicating the potential for continued program success, rationalizing the 8-week program implementation that will more extensively train teachers in these same technologies, address questions and concerns in greater depth, and thereby increase teachers' confidence of use.

The purpose of the project curriculum described (reduced from the originally proposed 8-week timeline to be cost-effectively possible for the researcher and measure potential ROI / success of a longer-term 8-week project implementation), was to: (a)

measure the success of the program for further/continued use and implementation at the local study site; (b) meet the three program objectives of increasing teachers' confidence, skill, knowledge, frequency of use, and type of technology use in ELA instruction at the local site; and (c) improve literacy instruction and learning at the local study site through the use of increased internet-based technologies in instruction.

Regarding the levels, learners, scope, and sequence of the project, I designed the level of the curriculum material for adult learners who are beginners in technology use. While some of the teachers had experience with internet-based technology, such as Google Suite. Google Suite is a relatively simple, basic interface to navigate, and hence, to be successful, this project assumed learners would be of a novice level of technology use. Learner 360, Accelerated Reader 360, Docebo, and Blackboard Learning Management System described the additional specific learning technologies taught. The scope of the curriculum included: Day 1. A review of why technology is useful in literacy instruction; Day 2. Basic technology skills relevant to these programs and each program's use case; Day 3. Skills for effectively overcoming classroom obstacles, such as internet connectivity, student apprehension to technology, technology distractions, or lack of skill among students; and Day 4. Support for technology use for teachers, specifically for these three technology platforms, and how teachers can continue to learn and access tech support. Day 4 also included a review of the proposed 8-week program. When asked how many teachers would be interested in continuing to learn about these technologies over a longer timeframe, seven of the 10 participating teachers replied positively that they would like to continue learning.

Materials, units, lessons, and detail of the 4-day curriculum plan are described in the left column, respective to each segment/component. Details of the proposed 8-week curriculum plan are described in the right column.

Table A1

Curriculum Plan

Curriculum Unit	4-Day Program	8-Week Program
1) Technology in education: why use it? A review of why technology is useful in literacy instruction. (.5 day or 1 week).	Materials: PowerPoint and projector, data sources, and case study examples. Lessons: 1) Case study examples of Accelerated Reader 360, Blackboard, and Docebo implementations. 2) How technology helps with literacy learning: the ability to customize level for learning styles and student levels; ability to cater to different student needs and thus	Materials: PowerPoint, projector, data sources, case study examples. Lessons: 1) Case study examples of Accelerated Reader 360, Blackboard, and Docebo implementations. 2) How technology helps with literacy learning: the ability to customize level for learning styles and student levels; ability to cater to different student needs and thus

Curriculum Unit	4-Day Program	8-Week Program
	address a wider audience more efficiently.	address a wider audience more efficiently. This second lesson will include a breakdown of technology uses per learning styles and levels: Visual learners and video, kinesthetic learners and interactive modules, audio learners and video-audio technology, and a review of technological adaptations to individual learners and how programs can use AI to learn student skill levels, thereby reducing teacher workload/burden.
2) Technology skill and use case: Basic technology skills relevant to these	Materials: Learner360, Docebo, and Blackboard trial subscriptions for teacher-learners. Lessons:	Materials: Learner360, Docebo, and Blackboard trial subscriptions for teacher-learners. Lessons:

Curriculum Unit	4-Day Program	8-Week Program
programs and each program's use case. (1.5 days or 4 weeks).	1) When to use Learner 360 and navigating the interface. 2) When to use Docebo and navigating the interface. 3) When to use Blackboard and navigating the interface. 4) Pros and cons of all of the above.	1) Expanded skills navigating Learner 360 and use cases. 2) Expanded skills navigating Docebo and use cases. 3) Expanded skills navigating Blackboard and use cases.
3) Overcoming classroom obstacles directly address: Skills for effectively overcoming classroom obstacles such as internet connectivity,	Materials: Video demonstrations, handouts. Lessons: 1) Video examples of potential issues, including student barriers, distractions, and skill levels. 2) Handouts and explanations of best practices in each case. 3) Minimizing distractions: how to mitigate social media use in class	Materials: Video demonstrations, handouts, group interactive prompts. Lessons: 1) Video examples of potential issues, including student barriers, distractions, and skill levels. 2) Handouts and explanations of best practices in each case. 3) Interactive group focus time in

Curriculum Unit	4-Day Program	8-Week Program
student apprehension to technology, technology distractions, or lack of skill among students. (1 day or 2 weeks).	and settings for software and devices to minimize students' use of personal applications that could be distracting.	which various scenarios are acted out from prompts, responded to, and discussed. The 2-week timeframe of this unit will include take-home assignments encouraging teachers to research scenarios and how they may best be handled applying key pedagogical concepts.
4) Easily accessing support, directly address these barriers and facilitate increased positive internet-based technology use	Materials: List of links and resources provided in printed handout and online email format; a common FAQ handout regarding questions on each of the three main technologies and common solutions. Lessons:	Materials: List of links and resources provided in printed handout and online email format; a common FAQ handout regarding questions on each of the three main technologies and common solutions. Lessons:

Curriculum Unit	4-Day Program	8-Week Program
in literacy instruction: Support for technology use for teachers, specifically for these three technology platforms and how teachers can continue to learn and access tech support. (.5 day or 1 week).	1) Handouts and review. 2) What to do in cases of outages or poor connectivity. 3) Review continuing education possibilities and potential long-term program.	1) Handouts and review. 2) What to do in cases of outages or poor connectivity. 3) Reporting incidents or outages and what to do in cases of suspected data breaches to protect teachers' and students' proprietary information and personal data. 4) Review continuing education possibilities.

During the 4-day program, classes were held on a Friday, Saturday, Sunday, and Monday for 4 hours each day. During the proposed 8-week program, classes will be held in the same school conference room, 3 days per week, immediately after school, for 1.5 hours each day. This will allow for an expansion and continuing professional education

on what was introduced and covered in the 4-day program, according to the curriculum outlined in the table. The general weekly format of classes will align with the following sequence and format, allowing time between classes for learning, review, and retention.

First class of each week: Handouts, review of information via lecture or videos.

Second class of each week: Kinesthetic, participatory learning via group discussion and interaction, as well as online modules and learning the software kinesthetically by using and practicing in class.

Third class of each week: Questions, troubleshooting, and review of materials.

Professional Development / Training Curriculum and Materials

I described the training curriculum and materials in the previous section. This section describes the purpose of the program concerning professional development and the training curriculum materials for the broader target audience. The purpose of this program is to provide internet-based technology use support and guidance to ELA instructors at the local setting, while providing a template for a program to potentially be adopted and used at other settings facing similar challenges of technology adoption and use in literacy instruction. The 8-week program is intended to be adopted as a professional development and continuing education program aiding literacy teachers in keeping pace with technological advancements that can be beneficial for use in optimizing instruction. Because technology is continually advancing at an exponential rate, and has been since the late 19th century (Whitaker, 1996), ensuring teachers can keep pace with such developments not only aids instruction in an increasingly linguistically diverse learning environment but also ensures students are prepared for a

technology-saturated world upon graduation. By increasing teachers' confidence, skill, and use of internet-based technologies in the classroom, students can become more successful at literacy learning and can be better adapted to use technology as a tool for learning later in life.

This training program will inform teachers of how to use new technologies they are not yet comfortable with within the most effective ways, while minimizing and mitigating risks of increased technology use, such as the risk of technological distractions, including excessive social media use (Fashami, 2020; Gallegos et al., 2018). This program also teaches teachers how to use the applications covered (Blackboard, Learner260, and Docebo) and how to use them interactively and in a way that is tailored to individual student needs for the greatest benefit to students (Herrero et al., 2018; Katzel, 2021; Lambert & Lane, 2004; Sabuncuoglu, 2020). This involves an understanding of AI (as covered in Unit 1) about new learning software and how AI is useful in adapting to specific student's needs.

The goals of this project are as follows, and as previously discussed in the evaluation report:

1. Increase ELA teachers' confidence of use, knowledge, and skill of use in internet-based technologies for literacy instruction at the study site.
2. Expand the types of internet-based technologies used in literacy instruction by ELA teachers at the study site.
3. Increase the prevalence of use of internet-based technologies used in literacy instruction by ELA teachers at the study site.

The learning outcomes were for the 4-week project and will continue to be the outcomes for the 8-week project, as follows (these outcomes also informed the evaluation described in the first section of this appendix).

Learning Outcome 1. Ensure teachers are capable of autonomously logging into and using the following three applications to facilitate at least an hour-long class period for literacy learning according to each program's intended capability (each program individually): Docebo, Blackboard, and Learner360 (Accelerated Reader 360). This will include knowledge of how to set up an account, save information, access student targets and data, and answer common student questions while also facilitating instruction. This outcome will be more critically evaluated by using a checklist related to these outcomes during the extended program.

Learning Outcome 2. Ensure teachers are equally confident in and capable of using all three software applications and that all three applications are noted somewhere in ELA teachers' curriculum plans. A balance and diversity of program use will also provide students with the skills and abilities they need to pivot between software upon graduation.

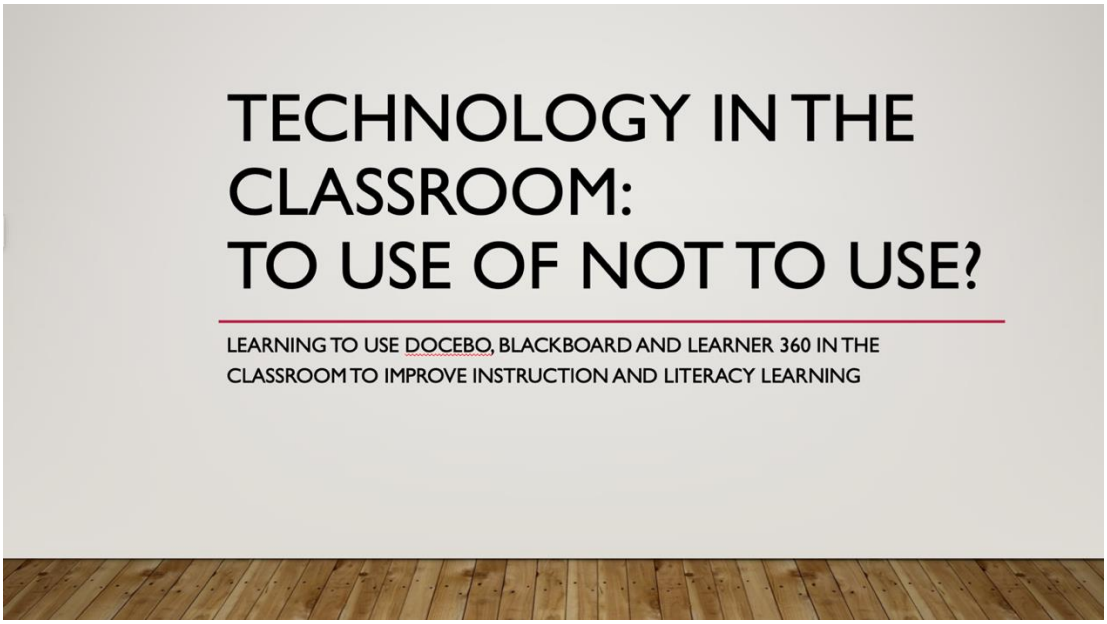
Learning Outcome 3. Ensure all participants/teachers know how and where to access supportive resources and report or deal with a potential incident.

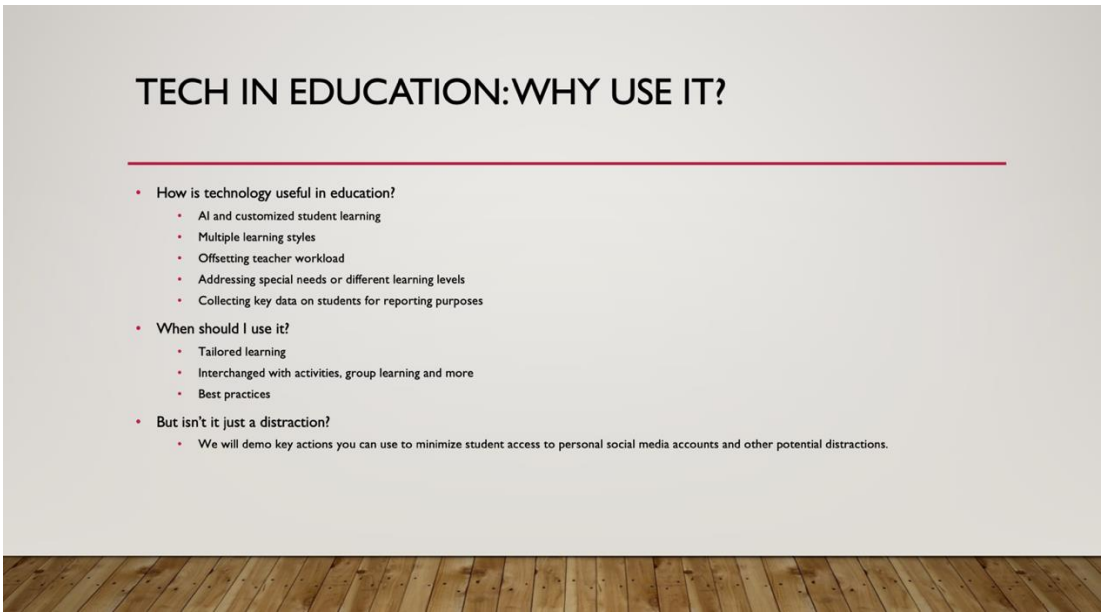
The target audience for this program will be ELA middle school teachers, as they will be the direct recipients of the program. ELA teachers will be taught and evaluated according to this program's components. Secondary stakeholders include students (recipients of the benefits of this program), parents, and school administrators.

Outlines

The following slides depict a more detailed outline and demonstration of the curriculum components listed within the table and are used as PowerPoint slides through the program's implementation. Materials included are depicted within the slides (such as handouts, slides, and resources). The slides and timeline related to the 4-day program are listed within the slides of the extended program curriculum. In slides containing hyperlinks, the lecturer used the projector and computer to navigate to the link and give expanded explanations, depictions, and descriptions of each resource or case study.

Program Curriculum Slides




TECH IN EDUCATION: WHY USE IT?
How is technology useful in education?
AI and customized student learning
Multiple learning styles
Offsetting teacher workload
Addressing special needs or different learning levels
Collecting key data on students for reporting purposes
When should I use it?
Tailored learning
Interchanged with activities, group learning and more
Best practices
But isn't it just a distraction?
We will demo key actions you can use to minimize student access to personal social media accounts and other potential distractions.


CASE STUDIES
Accelerated Reader 360
https://digitalcommons.gardner-webb.edu/cgi/viewcontent.cgi?article=1171&context=education_etd
https://www.edsurge.com/news/2016-09-15-s-cool-tools-teacher-voice-edition-masteryconnect-accelerated-reader-360-todaysmeet
https://www.edsurge.com/news/2015-11-10-nationwide-renaissance-learning-reading-report-finds-students-still-falling-short
Blackboard
https://www.featuredcustomers.com/vendor/blackboard/case-studies
https://microsites.ncl.ac.uk/casestudies/tag/blackboard/
Docebo implementations
https://www.docebo.com/learning-network/blog/category/elearning-case-studies/
https://www.featuredcustomers.com/vendor/docebo/case-studies

CUSTOMIZING LEARNING

Picture

- Addressing student needs individually
  - Audio learners
  - Visual learners
  - Kinesthetic learners
  - Learning disabilities and AI adaptations
- Minimizing teacher workload
  - Large class sizes, diverse students and teacher shortages
  - AI
- Addressing a more diverse audience
  - Cultures
  - Language diversity
  - Learning levels and special needs students

APPLICATION USE CASES

- Blackboard
  - https://bryanalexander.org/education-and-technology/how-people-actually-use-blackboard-according-to-blackboard/
  - Highly versatile
  - Storing and sharing data
  - Lesson plan documentation and delivery
- Docebo
  - Blended learning
  - Easing stress of online learning
- Learner 360
  - Accelerated Reader 360
  - https://www.ncld.org/reports-studies/promising-practices-to-accelerate-learning-for-students-with-disabilities-during-covid-19-and-beyond/part-1-research-based-approaches-to-accelerate-learning/
  - Group instruction
  - Customized instruction

NAVIGATING THE APPLICATIONS

- 1) Accelerated Reader 360 navigating the interface (demo)
- 2) Docebo navigating the interface (demo)
- 3) Blackboard navigating the interface (demo)
- 4) Pros and cons
  - Versatility but less specificity
  - Challenges faced in hybrid and remote learning environments

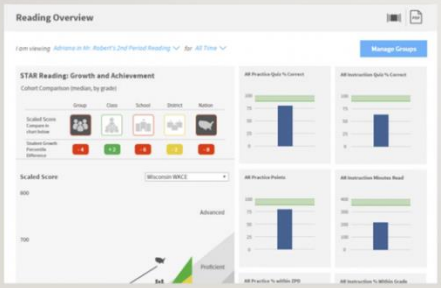
ACCELERATED READER 360

1) Software manual: https://doc.renlearn.com/KMNet/R004443023GJ19BE.pdf

2) Demo through account setup

ACCELERATED READER 360

- 3) Example of comprehensive views of student data and progress:

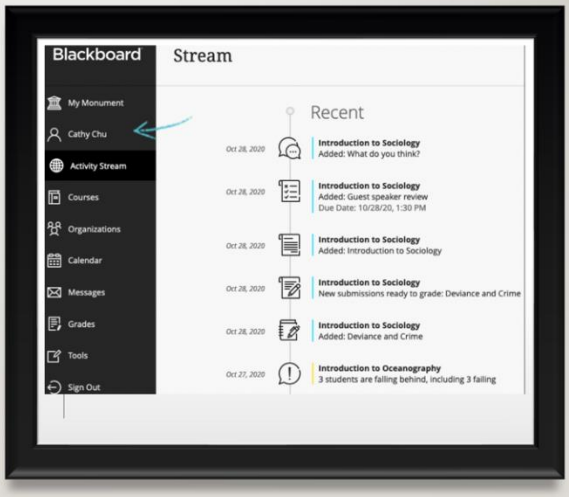


DOCEBO

- 1) Accoung setup demo: https://www.docebo.com/lp/learning-suite/?utm_term=docebo&utm_campaign=11908796538&utm_source=adwords&utm_medium=ppc
- Example of interface (demo navigating entire interface):

BLACKBOARD

- 1) Account setup demo: https://www.blackboard.com/en-eu/teaching-learning/learning-management/blackboard-learn
- 2) Examples of interface:



OVERCOMING OBSTACLES

- Poor connectivity: Bandwidth solutions
- Student apprehension
- Distractions: VPN and account settings / restrictions
- Lacking skill or comfort of use: Best practices for introducing technology

MINIMIZING DISTRACTIONS: SOLUTIONS

- Devices specific to class (don't use your home phone and leave it in your locker!)
- VPN settings
- Encourage students to share their experiences of technology (active versus passive learning)
- Interchange video, module, audio, and other interactive activities (avoid more than 30 minutes doing any single type of activity so as to encourage active learning).

PROMPTS FOR GROUP ACTION AND DISCUSSION

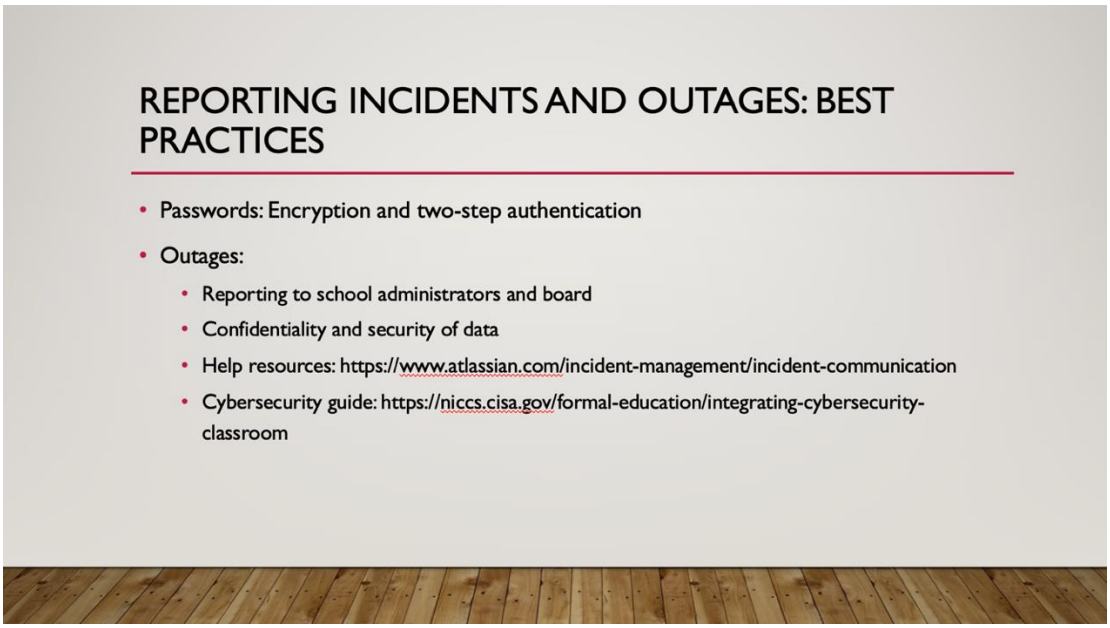
- Design your lesson plan for your seventh grade class for the week using Blackboard.
- Create your account in Docebo and navigate your dashboard. Write down any issues or questions that arose.
- Use Accelerated Reader 360 to give a 10 minute lesson to two of your peers. What was challenging? What was easy?

TAKE HOME SCENARIOS

1) In your class of 20 sixth graders, you have ten 7th grade level readers, one 4th grade level reader, three fifth grade level readers and six 6th grade level readers. What technologies will you use to teach reading for the semester?
2) In your class of 30, you have 10 audio learners, five kinesthetic learners, ten visual learners, and five special needs students (ADHD). How will you address all students' needs equallly? How will you use technologies to assist with this?

SUPPORTIVE RESOURCES

- Using Blackboard: https://www.blackboard.com/educator-resources
- Using Docebo: https://help.docebo.com/hc/en-us/categories/360003044220-Docebo-Learn
- Using Accelerated Reader 360: https://help.renaissance.com/



Implementation and Evaluation Plan

I described the specific evaluation plan for this project within the prior evaluation plan section. I will use the same evaluation methods following the proposed 8-week program as were used after the 4-day program. This includes a focus group with questions related to the three outcomes, the use of a survey instrument measuring technology skill and comfort of use, and a review of documents, including lesson plans to evaluate the frequency of use and types of technology teachers document as using and continuing to plan to use.

The implementation of the 8-week proposed program is described in this section through the following steps:

1. A third-party vendor, such as Everhuman, will be vetted and contracted with the school to specialize in technology tutoring and training. An individual contractor from this vendor will lead the expanded 8-week training. This will

provide for an individual who is a neutral third party to lead the training with the knowledge and skill base necessary to walk teachers through each unit and lesson, including a full demonstration of navigating each of the three systems' dashboards and setup and use processes. This will also provide teachers with a personalized learning experience and allow for answering any questions or concerns that arise through the demonstrations, practices, and assignment prompts.

2. The 8 weeks of lessons will be scheduled and approved by school administrators and the board. Teachers will be invited to participate.
3. Grant funds received will be used to download and implement each of the three software programs for at least the 8 weeks necessary, allowing all teachers to create their accounts for at least the duration of the class. School hardware resources will also be provided.
4. Classes will be carried out according to the curriculum described previously.
5. A neutral meeting facilitator will be identified to collect feedback from teachers in evaluation and review meetings, while maintaining a psychologically safe environment in which teachers feel safe to share.
6. As described in the original proposal, additional project supportive resources will include:
    a. A functional helpdesk application for teachers.
    b. A chatroom online for teacher discussion.

c. An ongoing bi-monthly support meeting group for teachers on campus, which will be optional.

Policy Recommendation with Detail

The local study site at which the program will be implemented has no specific policy regarding internet-based technology use in literacy instruction. According to the research conducted and to which this project responds, it is recommended that teachers be provided with additional professional development training and education regarding technology use in literacy instruction, its benefits, and how to use the applicable programs; hence, the program has been designed to address this recommendation. Should the 8-week program be found successful through evaluation and based upon the initial success of the 4-day program, a policy is recommended regarding the use of internet-based technology in literacy instruction at the local study site to address the following areas: (a) recommended use and adoption of types of software applications recommended for optimal literacy instruction and learning (those included in this program: Blackboard, Docebo, and Accelerated Reader 360); (b) requirement for continuing education or professional development programs addressing technology use in literacy instruction (such as, a requirement to offer this program to all new onboarding instructors); and (c) provision of cybersecurity, tech readiness, and tech barriers or challenges seminar training to all existing literacy teachers at the local study site. Evidence supporting these policy recommendations can be found in the literature.

A need exists nationwide for increased use of internet-based technology as an effective means to improve literacy instruction in ELA classrooms—with the local study

site being no exception (Beucher et al., 2019; Lisenbee, 2016; Mundy et al., 2012; Purcell et al., 2013). Teachers are often reluctant to use technology in the classroom due to a lack of confidence of use, a lack of skill in what types of technologies to use, and negative beliefs about technology, despite resources such as Accelerated Reader 360 shown as effective in optimizing literacy instruction and learning (Lisenbee, 2016; Mundy et al., 2012). Therefore, a policy ensuring ongoing education to counter these known issues is only logical.

Goals of the policy recommendation are as follows and in alignment with the projects' major outcomes: (a) Continually increase ELA teachers' confidence of use, knowledge, and skill of use in internet-based technologies for literacy instruction at the study site, even as new technologies evolve; (b) Continue to expand the types of internet-based technologies used and adopted in literacy instruction by ELA teachers at the study site; (c) Continue to increase the prevalence of use of internet-based technologies used in literacy instruction by ELA teachers at the study site as new teachers are onboarded and trained and as technologies emerge and evolve; and (d) Ensure ELA teachers' understandings of relevant technologies for use in literacy instruction are current and proficient.

Appendix B: Permission Letter

Dear Superintendent,

I intent to conduct a study exploring how ELA teachers use internet-based technology in the classroom and what barriers they face to using this technology in the classroom. I'd like to ask permission to conduct the study by contacting ELA middle school teachers in this school district, through a written recruitment letter explaining the following intent and ethical considerations of the study, in addition to its potential benefit. If you are in agreement with my proposal, please remit a signed copy of this letter. Thank you for your consideration.

Study Significance:

Researchers indicate that the integration of internet technology into K–12 classrooms can improve student outcomes. Self-reported statements from 15 teachers and district survey results at the local setting, a rural school in a Southern state, indicated that sixth- through eighth-grade English Language Arts (ELA) teachers were not making effective use of research-supported internet resources in literacy instruction and assessment, and it is not known why.

Study Purpose and Procedures:

The purpose of this explanatory, qualitative case study is to understand how ELA teachers are using internet resources in literacy instruction. The research questions will inquire how middle school ELA teachers are using internet-based technology in the ELA classroom, which technologies they select for integration into the ELA curriculum, and barriers they face when they used internet-based technology in ELA instruction.

Semistructured interviews and document analysis will explore the lived experiences and behaviors of 10 participants' technology use in literacy instruction. Qualitative coding and thematic analysis will be used to identify the essential meaning of participants' lived experiences from interview and document data. The results of this study will contribute to the development of a professional development project that provides technology education to literacy teachers to minimize literacy learning gaps and contribute to social change.

Ethical Considerations:

All participants are voluntary and reserve the IRB standard right to voluntary participation and withdrawal from the study at any time. Participants' identifying information will remain confidential, and any information they share will in no way jeopardize their employment position. Interviews will be carried out privately.

Sincerely,

Shelly Ann Butler

Appendix C: Recruitment Letter

Dear Middle School ELA Teacher,

You are invited to participate in a study exploring how ELA teachers use internet-based technology in the classroom, and what barriers they face to using this technology in the classroom. If you would like to participate after reading this letter in its entirety, please remit a signed copy of this letter. Thank you for your time and consideration.

Reason for the Study:

Researchers indicate that the integration of internet technology into K–12 classrooms can improve student outcomes. Self-reported statements from 15 teachers and district survey results at the local setting, a rural school in a Southern state, indicate that sixth- through eighth-grade English Language Arts (ELA) teachers are not making full use of research-supported internet resources in literacy instruction and assessment, and it is not known why.

Study Procedures:

If you choose to participate in the study, you will have the opportunity to participate in a 1:1 Zoom interview with the researcher, which will be scheduled upon the return of this signed letter. You are also invited to share your district lesson plan notes. All information you provide will remain confidential and will in no way jeopardize your employment position. The intent of this research is to understand how ELA teachers use internet-based technology in the classroom and potential barriers, so that more effective training and student outcomes can be facilitated. The results of this study will contribute to the development of a professional development project that provides technology

education to literacy teachers to minimize literacy learning gaps and contribute to social change. You will be provided with a copy of the anonymized results.

Ethical Considerations:

You will retain the right to voluntary participation throughout the entire study should you choose to participate. This means that you may withdrawal from the study at any time, for any reason, without giving reason, including during the interview. Any identifying information you provide will remain confidential to the researcher only, and any information you share will in no way jeopardize your employment position. Interviews will be carried out privately. Please contact the researcher with any questions.

Sincerely,

Shelly Ann Butler

Appendix D: Lesson Plan Review Prompts

1) What common patters exist within the documents related to:
    a. Frequency of internet-based technology use.
    b. Type or tool (application) of internet-based technology use.
    c. Purpose or reason for technology use (learning outcome or exercise).

Appendix E: Open-Ended Questionnaire Instrument

RQ1: How participants use technology and RQ2: What technologies are used:

1) Describe what, if any, internet-based technologies you use in the ELA classroom?
2) How would you describe your use of these technologies?
3) For what purpose do you use these technologies?
4) How frequently would you describe you use these technologies?
5) What is your comfort level with using internet-based technology in the classroom?

RQ3: Barriers of technology use:

6) Do you prefer or not prefer to use internet-based technology in the classroom? Why or why not?
7) Are there primary challenges you encounter to using internet-based technology in the classroom? If so, what?
8) Are there things that make using internet-based technology in the classroom easy? If so, what?
9) Do you feel supported in knowledge, help and skill to use these technologies?
10) Do you think internet-based technologies are beneficial or not in ELA classrooms? Why or why not?