Urban English Language Arts Teachers’ Stories of Technology Use: A Narrative Inquiry

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Urban English Language Arts Teachers’ Stories of Technology Use: A Narrative Inquiry

by

Bridget Abbas

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy
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Date of Approval:
April 29, 2016

Keywords: culturally responsive teaching, digital literacy, English language arts, narrative, technology, stage-environment fit

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Dedication

For Felek

I googled "words that mean more than love"
Ya'aburnee (Arabic) "You bury me"
    Desire to die first because living without the other person is impossible
Intense. Perfect.

Is it real?

Or is it a Chinese character girls tattoo in the shallows of their backs
    Translates to "noodle"
"Ya'aburnee"
    No verification found

Do I use it?

Ya'aburnee, my love
For you, I risk proclaiming noodle
Acknowledgements

Thank you, “Samantha” and “Martin,” for coming on this journey with me. Your willingness to open your classrooms and share the thoughts behind your instructional practices made this inquiry possible. I am forever grateful.

Support from my doctoral cohort proved invaluable throughout this process. To Jen, Mike, and Ruchelle, my gratitude for being wonderful collaborators, critics, and friends.

This dissertation would not have come to completion without the steadfast support of my family. The Mahoney’s and Abbas’s are my biggest cheerleaders. Thank you to my parents, Rosalie and Jim, and brother, John, who have always seen this dissertation as a foregone conclusion. Your belief in me is much appreciated.

To my committee, Cheryl, Janet, Jenifer, and Pat, my gratitude for your guidance throughout this process. You each significantly impacted not just this inquiry, but also my development as an academic. By facilitating my first conference presentation, engaging me in the research process, improving my academic writing, and helping me become a more reflective educator, I am a better teacher and researcher because of you.

A special thank you to Cheryl and Pat for serving as co-chairs on my committee and mentors to me these past several years. Thank you to Cheryl for taking me under your wing. Today, I think you are even cooler and more amazing than I did at Aveda all those years ago when I eavesdropped on your conversation with the manicurist. Thank you to Pat for welcoming me into the English Education department and the Tampa Bay Area Writing Project with open
arms. Your example of supporting teacher growth and autonomy is one I try to emulate, especially as I continue moving into roles supporting and supervising teachers.

Finally, thank you to my husband, Felek. A full discussion of your support would take up several pages, so I will keep it succinct. Thank you for proofreading this dissertation and helping me with formatting it into the wee hours of the morning. Thank you for letting me talk ad nauseam about my classes and this inquiry, for saying encouraging things when I doubted myself, and for insisting I sometimes close my laptop and spend time with you. Thank you for loving and believing in me.
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Abstract

Technology use in high-minority, low-income middle school ELA classrooms is defined by traditional instructional practices (Applebee & Langer, 2013; Attewell, 2001; Boser, 2013; Cuban, 2001; Lankshear & Knobel, 2008), barriers to access (O’Dwyer et al., 2005; Purcell et al., 2013; Warschauer & Matuchniak, 2010), and inequalities in use (Banister & Reinhart, 2011; Beers, 2004; Gorski, 2009; Makinen, 2006; Powell, 2007; Reinhart et al., 2011; Dijk, 2003, 2006; Warschauer et al., 2004). This characterization, or grand narrative, of technology use is echoed and challenged by this narrative inquiry. Here the stories of two ELA teachers frequently using technology in instruction and working in a high-minority, low-income middle school are examined, guided by the following research puzzle:

What might I learn about teaching with technology from two middle school ELA teachers utilizing technology in a high-minority, low-income school? In what ways might participants’ stories mirror or differ from the grand narrative of technology use in high-minority, low-income middle schools? In what ways might this inquiry expand general knowledge of technology use in high-minority, low-income, middle-level classrooms?

The resulting narratives are considered in terms of culturally responsive teaching (Delpit, 1994, 1995; Gay, 2000; Irvine, 2002; 2003; Ladson-Billings, 2006), digital literacy (Gilster, 1997; Knobel & Lankshear, 2006; Martin, 2008), and stage-environment fit theory (Eccles & Midgely, 1989; Eccles et al., 1993; Eccles & Roeser, 2011). Findings from this inquiry suggest technology
increases engagement and is a distraction, technology makes teaching easier, and barriers hinder technology use.
Chapter One: Study Overview

My Journey to the Inquiry

This inquiry started with the beginning of my doctoral studies in 2010. At that time, I was happily teaching middle school English Language Arts (ELA) in the southeast. The school was large, enrolling about 1,200 students in grades six, seven and eight. As a Title 1 school, over 50% of the students qualified for free or reduced-price lunch, a common indicator of poverty in school systems. Throughout the years of my employment, 30% to 40% of students identified as Hispanic and many received second language supports. Located in a suburban school district, the school sat in a tough part of town known for trailer parks and criminal activity. The school district paid substitutes a premium for taking jobs at this school and its “high need” neighbors.

Despite the challenges associated with teaching at a high-poverty school, faculty and staff returned year after year. They shared close bonds and similar backgrounds. Like myself, the faculty and staff were mostly white and middle class. They referred to themselves as “family.” The moniker was enacted through bridal and baby showers, Friday night happy hours at a local dive bar, and the existence of a faculty baseball team with lots of spirit but a losing record.

When reflecting on my story of technology use as an ELA teacher in a high minority, low-income middle school, specific scenes and images jump immediately to my mind. I represent these images in the poem below. The poem follows the structure of a ghazal, a poetic form originally utilized by Persian poets in which each stanza can stand on its own and a theme is repeated and emphasized throughout. This poem provides a snapshot not only of the types of intellectual tasks my students completed with technology but also how they interacted with one
another while they used technological tools. Although I didn't realize it at the time, my classroom was an anomaly, a place in which minority, low-income students utilized technology on a regular basis to engage with ELA content and skills, digital literacy, and 21st century skills.

Hazelnut wafts from the coffeepot and computer screens blink brightness.

The day begins with power cords. This is a teacher’s story.

Students huddle over laptops. “Only a two” conspires with “a low three.” Character dialogue is hotly negotiated. This is a learning story.

Free lunch on their minds. Students type “tacos.” They hesitate, falter.

Skill-less typing from tech-less homes. This is a technology story.

“Won’t work,” and “Doesn’t care” help their partners find websites.

Assignments nearly done, they assist others. This is a relationship story.

Enthusiastic “struggling” teens share their questions, explorations, and creations.

They celebrate story.

Can’ts can and can’ts must. This is a success story.

This poem depicts a classroom in which technology plays a central role. The emphasis on teaching and learning with technology occurred in my classroom after nearly six years in which I rarely incorporated technology into the curriculum. When I began teaching, in the early 2000s,
technology permeated my personal and professional lives. It continues to do so today. I am rarely without a laptop, e-reader, tablet, or smart phone and most activities are mediated through online actions (i.e. scheduling a yoga class, messaging friends, or ordering takeout). Based on my prolific technological use, integrating technology into my classroom seemed natural; however, during the first six years of my teaching career, my students rarely had access to or used technological tools at school. The district and school administrators did not consider integrating technology into instruction important and provided little support beyond brief technology workshops held over the summer. In school, I found barriers to access difficult to overcome. For example, the school contained one computer lab housing 30 desktop computers, but state and district-mandated electronic testing rendered it perpetually unavailable for instruction. Specifically, online reading assessments required by the district for all 1,200 students in the school occurred several times a year and monopolized the computer lab for weeks at a time. A further barrier to student use, the school administration preferred that teachers not allow students on teacher-issued computers because of concerns over privacy of students’ electronic records and teacher email communications. As a rule-conscious new teacher, I adhered to the wishes of administration. In my first two years of teaching, I had one desktop computer used primarily for administrative tasks like recording attendance and emailing parents. I did use the computer for lesson planning, but not for instruction.

During my third year of teaching, 2005-2006, the principal decided technology contained some instructional value and ordered a set of five computers for each classroom. The school’s technology coordinator lined five computers up on a table in the back of my classroom. I wanted to use the computers frequently in instruction and for intellectually challenging tasks, but because of an unreliable internet connection and local network, I found managing assignments
during which 22 students took turns using only five computers difficult. The few assignments we attempted ended in frustration. Students lost work when the school’s Wi-Fi network failed at random intervals. Loading saved work from the school server took in excess of 15 minutes. Additionally, many of my students lacked basic computer skills resulting in lots of as-needed technological instruction and further slowing progress on assignments. A task that might take a period or two without technology took at least six periods to complete with the use of technological tools. My insecurities as a new teacher compounded these challenges. Like many new teachers, I feared I would lose control of the classroom if I assigned cooperative tasks; so my students completed most assignments independently on the computers. As a result, the computers gathered dust, used occasionally as high-powered typewriters by the few students in class more comfortable with typing than writing assignments by hand.

As time progressed, the school server improved and the technological acumen of my students grew. Five newer and faster computers replaced the five original machines. I received a digital projector and some district training on incorporating technology into the curriculum through cooperative group structures. The district provided teachers with an online teaching platform that offered a secure virtual space for student discussions, collaboration, and teacher-student communication. Web services like blogs and wikis became available for public use. Progressively, technology played a larger role in my classroom. By 2010, my students used technology at least three times a month and the digital projector replaced the blackboard for daily classroom activities. For example, they researched poets in small groups and reported their findings on wikis. They regularly typed assignments and used online dictionaries and thesauruses.
Despite the increasing ease of technology integration in my classroom, I was not using technology as frequently as colleagues who taught at more affluent schools. They told me how they regularly incorporated technology into the curriculum, teaching digital literacy and 21st century skills such as those outlined by the National Education Association’s (NEA) *An Educator’s Guide to the “Four Cs”* (critical thinking, communication, collaboration, and creativity) and championed by the Partnership for 21st Century Learning (P21). Due to the challenges associated with using technology in my classroom, I found teaching digital literacy and 21st century skills as thoroughly as I wanted difficult. Some technology use was occurring in my classroom, but a persistently slow and unreliable internet connection paired only a handful of computers for student use limited the amount of teaching and learning that occurred with technology. I tried augmenting our technological resources with technology-free activities mimicking online interactions. Students “tweeted” on index cards and “blogged” on butcher paper. Articles in practitioner magazines tell stories similar to mine in which teachers focus on 21st century skills using low-tech methods (Barclay, 2013; NEA, nd).

In my sixth year teaching, the school applied for and won a large technology grant. I was not one of the grant writers, and am ignorant of the goals of the grant and the funders; however, my students and I benefitted from the technology purchased with the grant money. Mobile carts stocked with class sets of laptops and iPads rolled down the hallways and into classrooms. When the principal proudly rolled two carts into my classroom, my students broke into applause and insisted it was “like Christmas.” We abandoned the lesson plan and dove into the carts. For many of my students, it was the first time they touched an iPad or used an up-to-date laptop. Improvements to our school’s internet connection swiftly followed.
The availability of technology substantially changed my pedagogy. Focusing on the ELA curriculum, digital literacy, and 21st century skills, I reworked my lesson plans so students engaged in a multitude of activities mediated by technology. First, I created a class blog where students wrote about shared class readings. In an attempt to connect students with an authentic audience and purpose for writing, I made the blog public in the hope that people outside of the classroom and school would read and respond to students’ blog posts. When reading Romeo and Juliet, the blog became a forum for students to debate the concept of love at first sight. Students from other ELA classes responded to my students’ posts. Shakespeare enthusiasts unconnected to our classroom and school community also commented. Responses from online strangers thrilled my students. It shifted their focus from getting an “A” to convincing online strangers love at first sight does/doesn’t exist. The blog posts and responses became authentic persuasive writing tasks students genuinely cared about.

I also employed collaborative structures when students used technology. In one assignment, students worked in groups of three to create poetry wikis on which they revised and shared their best poems. Through their writing, students demonstrated an understanding of various poetry forms. Students also employed more mature vocabulary and complex phrases due to the suggestions of their peers.

Through the use of text-to-movie websites (i.e. www.goanimate.com), students demonstrated their understanding of plot and dialogue by making short animated cartoons both independently and with a partner. They also conducted research on topics relevant to our curriculum. Through conducting research online, they practiced evaluating sources as well as organizing and synthesizing large quantities of information. Additionally, regular use of word
processing programs enabled them to manipulate texts and utilize online writing tools in a way that parallels writing in the workplace.

In the doctoral program, I learned how my story of technology-use in a high minority, low-income ELA classroom is both similar and different from the way technology use in high minority, low-income schools is represented in educational research. Research in the early 2000s found a lack of access to and use of technology characterized high minority, low-income classrooms (Attewell, 2001; Cuban, 2001). This mirrors my early teaching experiences. More recent research suggests grants like the one awarded to my school have resulted in increased availability of technology in high minority, low-income schools (Dijk, 2006; Warschauer, Knobel, & Stone, 2004).

At this point, the story depicted by research on high minority, low-income schools and the story of technology usage in my classroom part ways. According to research conducted in the last few years, high minority, low-income students use technology in school for tasks requiring little intellectual effort, rarely focus on digital literacy, or practice 21st century skills despite the availability of technological resources (Applebee & Langer, 2013; Boser, 2013; Purcell, Heaps, Buchanan, & Friedrich, 2013). Following the school’s acquisition of technological resources due to the grant, technology use in my classroom was in opposition to this research. My classroom was an exception to research findings, but it was not the only one. I witnessed changes occurring in other classrooms, too. The ELA teacher down the hall from my classroom created podcasts about local news topics with her students. On the other side of the school building, students in yet another ELA class created word webs incorporating images, sounds, and sentences they found online along with their own original content. I realized my story of technology use is just one of many that remain untold and unknown. I began to wonder about the stories of technology
integration in ELA classrooms at other schools. This wonder, paired with a desire to share the success stories of other teachers, prompted my plans for the present study of two ELA teachers’ experiences with technology in their classrooms.

Statement of the Problem

**Technology in education.** Technology enables teachers to personalize instruction, engage students in learning, and facilitate collaboration (Applebee & Langer, 2013; Cuban, 2001; Herrington, Hodgson, & Moran, 2009; Hicks, 2009). Through technological tools, teachers can change teacher-centered classrooms into student-centered, inquiry-based spaces aligned with social constructivist ideas. Research confirms the use of computers in classrooms can shift teaching and learning interactions towards a co-learner model with both teachers and students learning together (Burns & Poleman, 2008; Park & Ertmer, 2008; Williams, 2005). Despite the results of these studies, the integration of technology in classrooms has largely failed to transform education (Applebee & Langer, 2011, 2013; Banister & Reinhart, 2011; Cuban, 2001; Cuban, Kirkpatrick, & Peck, 2001; Wolfe, 2011). Additionally, access to technology does not automatically move teachers towards a constructivist teaching paradigm (O’Dwyer, Russel, & Bebell, 2005; Ringstaff & Kelley, 2002; Windeschilt & Sahl, 2002). Instead, technology frequently supports traditional teacher-centered educational practices like using PowerPoint to present lecture notes in place of a blackboard and chalk (Applebee & Langer, 2013).

**Technology in high-minority, low-income schools.** The potential of technology is particularly untapped in high-minority, low-income schools where barriers to access and use abound. The lack of access and use of technology in high-minority, low-income schools is explained by the digital divide, the disparity in technological resources available to low-income
versus middle-class and affluent students (Reich, Murnane, & Willett, 2012; Warschauer & Matuchniak, 2010).

When teachers are able to access technological tools for instruction, research indicates the ways in which technology is used in low-income schools differs greatly from usage in higher income schools. Teachers in low-income, high-minority schools utilize technology for skill and drill activities or to support teacher-centered instructional practices in larger numbers than their colleagues at more affluent schools (Cuban, 2001; Attewell, 2001; Banister & Reinhart, 2011; Boser, 2013). As a result, technology use with high-minority, low-income students demands little intellectual effort and rarely focuses on digital literacy, or 21st century skills (Applebee & Langer, 2013; Attewell, 2001; Boser, 2013; Cuban, 2001; Lankshear & Knobel, 2008; Purcell et al., 2013). The access and usage divides in our nation’s schools produce minority, low-income students unprepared to meet the needs of a 21st century workplace in which technology is an essential tool (Bolt & Crawford, 2000; Lankshear & Knobel, 2008; Servon, 2002).

**Technology and the ELA classroom.** Research on technology use in ELA classes is limited. In my hunt for relevant literature, I only found one researcher who examined overall technology use in middle and high school ELA classrooms (McGrail 2005, 2007). A few focused specifically on technology’s potential role in writing instruction (Beaufort, 2000; Bledsoe, 2009; Grabill & Hicks, 2005; Kajder, 2004; NWP, 2010). Examined in total, the body of research addressing technology in ELA classrooms is woefully small.

The research that does exist suggests, in today’s ELA classes, paper, pencil, and printed pages dominate instruction (Applebee & Langer, 2013; Graham & Perin, 2007). Technology rarely makes an appearance despite the fact students need the skills taught in ELA classes, specifically reading, writing, listening, and viewing, to engage in the technologically mediated

The exclusion of technology from ELA classes is problematic for several reasons. First, students fail to connect the ELA curriculum with the world outside of school (Alvermann, 2002; Gabrielle, 2003). Failing to make obvious the linkages between in- and out-of-school literacy practices results in students who don’t see the value of the ELA curriculum and therefore lack academic motivation (Alvermann, 2002; Gabrielle, 2003).

ELA classes devoid of technology produce digitally illiterate students. In today’s world, functional literacy includes digital abilities (Rantala & Suoranta, 2008), thus instruction focusing on digital literacy is essential. Digital literacy, defined by Lankshear and Knobel (2008) as “meaning making mediated by texts produced, received, distributed, exchanged, etc., via digital codification” (p. 5) is an essential skill for today’s students. As the definition suggests, digital literacy goes beyond teaching students how to operate a piece of technology and concentrates on the thought processes needed to intelligently use the technology (Gilster, 1997; Lankshear & Knobel, 2008).

Finally, technology is necessary for the teaching of 21st century skills. The components of a 21st century skillset are given slightly different names by various scholars, but always include the 4Cs: critical thinking, communication, collaboration, and creativity (Assessment and Teaching of 21st Century Skills, 2008; Association of Supervision and Curriculum Development [ASCD], 2008; NEA, 2012; P21, 2011; West, 2012). The literature treats digital literacy and 21st Century Skills as two separate entities, but the 4 Cs are found within definitions of digital literacy. When discussing digital literacy, Gilster (1997) emphasized the importance of critical thinking to the process of displaying digital literacy. Likewise, the National Council of Teachers
of English (NCTE) (2008) names three of the 4 Cs (collaboration, communication, and creation) in its explanation of digital literacy.

Long included but not emphasized in educational goals for specific subject areas, the 4 Cs are not just components of digital literacy. Traditionally, educators focused on the 3 Rs, reading, writing, and arithmetic (NEA, 2012). Attention in recent years shifted from the subject-driven 3 Rs to interdisciplinary skills represented by the 4 Cs. Proponents of the 4 Cs claim the emphasis of these skills is necessary given the globalization or “flattening” of the world through technology. They claim the 3 Rs are no longer adequate to prepare today’s students for the world of tomorrow. Technology is an important component of teaching the 4 Cs. The NEA’s teacher guide for the 4 Cs explicitly suggests teaching critical thinking, communication, collaboration, and creativity with the aid of technology. Like proponents of digital literacy, the NEA and other organizations delineating the 4 Cs emphasize that instructional goals should not focus on learning how to operate a certain piece of hardware, rather, technology should be a tool to accomplish a specific intellectual task (Assessment and Teaching of 21st Century Skills, 2008; ASCD, 2013; NEA, 2012; Partnership for 21st Century Skills, 2011).

I believe digital literacy and 21st century skills should be taught in tandem with ELA curriculum. As I thought about the relationships among the three sets of skills, I imagined learning in ELA as a rope. Like a rope is made of several twisted fiber strands, learning in an ELA class should be made up of the ELA curriculum, digital literacy, and 21st century skills (see Figure 1).
Figure 1. The relationship among digital literacy, 21st century skills, and the ELA curriculum.

Alone, the ELA curriculum is only one fiber strand. It works as a rope, but has limited utility. Demand too much of it, and it will break. By adding a second strand, digital literacy, the rope is stronger and can handle tougher tasks. Adding a third strand, 21st century skills, makes the rope even stronger, consequentially there are few tasks it can’t handle. Success in today’s civic and economic climates demands students master the ELA curriculum, digital literacy, and 21st century skills.

Technology in the middle grades. Labeled “digital natives” by Prensky (2001) and the “net generation” by Oblinger & Oblinger (2008), today’s middle school students are more technologically savvy than any previous generation. Currently, 11-to 14-year-olds are the heaviest consumers of technology in the United States (Rideout, Foehr, & Roberts, 2010). Income does not significantly impact their recreational technology use. Adolescents at all income levels, even those in poverty, find ways to use technological tools (Ahn, 2011). A study funded by the Kaiser Family Foundation found 80% of adolescents own an iPod or MP3 player, 69% own a cell phone, 69% own a handheld video game device, and 27% have a personal laptop (Rideout, Foehr, & Roberts, 2010). The study did not report data on families’ income levels, but
did report data related to race. Researchers found black adolescents spent more time consuming technology than their Hispanic and white peers. Black adolescents watched six hours of TV and spent three hours listening to music daily compared with three hours watching TV and two hours listening to music for white adolescents (Rideout, et al., 2010).

The technologically barren environment of schools not only conflicts with students’ personal lives, it is also a mismatch with the way they think and learn best. Middle school students report a desire for learning experiences with technology (Bishop, & Pflaum, 2005) and learning best when using technology (Wolfe, 2011). Constructing learning experiences capitalizing on these abilities and preferences requires the inclusion of technology into the curriculum; however, at school students are required to turn off technological devices and read paper-based materials, often in isolation (West, 2012). The mismatch between traditional technology-free instruction and the way today’s adolescents think and learn hinders students’ academic success. According to stage-environment fit theory, students’ academic environments must be in concert with their needs as learners in order to foster healthy psychological and academic growth (Eccles & Midgely, 1989; Eccles et al., 1993; Eccles & Roeser, 2011). For middle grades students, the integration of technology into schools is essential for academic success.

**Synthesis of the Problem**

As the information above indicates, examining technology use in high-minority, low-income middle school ELA classes is complex. Students attending high-minority, low-income schools enjoy limited access to and use of technological resources. In these schools, students practice reading, writing, listening, and viewing, all essential skills for utilizing the internet; however, they spent little time using these skills in digital environments. As a result, students do
not connect the content of ELA class to the world outside of the classroom. The lack of technology use also means digital literacy, and 21st century skills are ignored. In addition to missing important connections and deficiencies of essential skills, the lack of technology use hinders teachers’ ability to match the school environment with adolescent students’ environments outside of the classroom (Eccles & Midgely, 1989; Eccles et al., 1993; Eccles & Roeser, 2011).

Educators need to identify potential ways to fix the problem of a lack of technology in instruction in high-minority, low-income middle level ELA classrooms. We must better understand how ELA teachers of minority, low-income students can integrate technology into the curriculum in ways that may address digital literacy, 21st century skills, and match students’ home and school environments. Stories of success are needed to help us imagine specific solutions at particular school sites.

**Purpose of the Study**

In this study, I utilized narrative inquiry (Clandinin, 2006, 2013; Clandinin & Connelly, 2000; Czarniawska, 2004; Riessman, 1993, 2008; Squire, Andrews, & Tamoukou, 2008), a genre of qualitative research that considers individuals’ experiences through story, to examine the experience of technology use in two high-minority, low-income middle level ELA classrooms. Although located in high-minority, low-income middle schools, these classrooms were unique because the teachers believed utilizing technology in their classrooms was an essential part of their practice and regularly integrated technology into their curriculum. In many ways, they defied the stories told by research on such schools. To varying degrees, their students engaged in digital literacy, practiced 21st century skills, and experienced a classroom environment somewhat matched to their out-of-school environments. This goes against the story put forth by current
research, referred to as the grand narrative. Lyotard (1979) defined grand narratives or metanarratives as comprehensive explanations about experience. As discussed in this chapter, the grand narrative of technology usage in high-minority, low-income middle school ELA classrooms is characterized by a lack of access to technology (Boser, 2013; Clark, 2000; Cuban, 2001; Facer & Furlong, 2001) and lack of use of technology for intellectually challenging purposes (Applebee & Langer, 2013; Boser, 2013; Cuban, 2001; Purcell et al., 2013). Lyotard (1979) believed grand narratives failed to tell the whole story. He called for challenges to the grand narrative through the examination of local narratives, referred to as ‘little stories’ by Boje (2001). These little stories often resist the grand narrative, but remain untold and subsumed by the generalizing nature of the grand narrative. My experience as a middle school ELA teacher working with minority, low-income students is an example of an untold little story that goes against the grand narrative. Likewise, the stories of technology use in the classes in this study are examples of little stories going against the grand narrative. Through careful examination of little stories, Lyotard (1979) suggested grand narratives be reexamined and reconsidered. Through an examination of two little stories, I sought to understand how middle level ELA teachers of minority, low-income students resist the grand narrative of technology usage in high-minority, low-income ELA classrooms by integrating technology into the curriculum.

**Research Puzzle**

**Puzzle.** Although many qualitative studies are guided by research questions, Clandinin (2013) suggests narrative inquiries might be guided by research puzzles. Broader than a research question with a precise definition and answer, research puzzles are constructed around a particular wonder (Clandinin, 2013; Clandinin & Connelly, 2000). The following research puzzle
is based on my wonder about the little stories of ELA teachers in high-minority, low-income middle schools who utilize technology in their classrooms as an integral part of daily practice:

What might I learn about teaching with technology from two middle school ELA teachers utilizing technology in a high-minority, low-income school? In what ways might participants’ stories mirror or differ from the grand narrative of technology use in high-minority, low-income middle schools? In what ways might this inquiry expand general knowledge of technology use in high-minority, low-income, middle-level classrooms?

Rationale. I chose ELA classrooms as the site for this study because functional literacy, the instructional focus of ELA classrooms and not a focus in other content areas, includes digital abilities (Rantala & Suoranta, 2008). I used middle school classrooms for data collection due to the heavy use of technology by this age group compared to other age groups (Rideout, et al., 2010) and of the importance of matching adolescents’ learning environments to their needs (Eccles & Midgely, 1989; Eccles et al., 1993; Eccles & Roeser, 2011).

Theoretical Underpinnings

When contemplating the theoretical underpinnings of this study, I identified several aspects of high-minority, low-income ELA classrooms I feel important to consider. These aspects include best teaching practices for minority students, how to teach ELA with technology, and the impact of the classroom and school environments on student learning. In order to consider and address each of these aspects, I will employ multiple theoretical frameworks to undergird my study of technology use in high-minority, low-income ELA classrooms. Taken together, these theories provide a holistic perspective on technology usage in high-minority, low-income ELA classrooms. These theories consist of culturally responsive teaching (Delpit, 1994, 1995; Gay, 2000; Irvine, 2002; 2003; Ladson-Billings, 2006), digital literacy (Gilster, 1997;
Knobel & Lanksheer, 2006; Martin, 2008), and stage-environment fit theory (Eccles & Midgely, 1989; Eccles et al., 1993; Eccles & Roeser, 2011). Each framework addresses an aspect of teaching with technology in a high-minority, low-income ELA classroom environment. An overview of these theories is below with more comprehensive explanations in chapter two.

**Culturally responsive teaching.** Culturally responsive teaching (CRT) addresses the act of teaching minority students examined in this study. Allowing minority students not to succeed has “repercussions too terrible to be tolerable” (Gay, 2000, p. 1) including not graduating from high school, low paying jobs or unemployment, poor health, and even incarceration (Bondy, Ross, Gallingane, & Hambacher, 2007). CRT suggests teachers take action to address the specific needs of minority students. Minority adolescents are at a disadvantage in U.S. classrooms due to the fact U.S. school culture is based on the norms and values of the white middle class (Delpit, 1994). An overwhelmingly white teaching force enforces these norms and values. As of the mid-1990s, over half the teaching force was white and teacher preparation programs were full of white middle class students (Delpit, 1994).

CRT is a way of teaching focused on ensuring the academic success of students from minority cultures. CRT teaching practices include utilizing students’ cultural knowledge, life experiences, learning styles, and personal and academic strengths in learning and instruction (Delpit, 1995; Gay, 2000; Ladson-Billings, 2006). Teachers who enact CRT adopt teaching practices intimately tied to relationships, activities, times, and spaces relevant to their students (Jocson, 2004). Through CRT teaching practices, students of minority cultures learn the skills, attitudes, and knowledge they will need for success in school and in their future lives (Ladson-Billings, 1994).
**Digital literacy.** Digital literacy (Gilster, 1997; Knobel & Lankshear, 2006; Martin, 2008) comprises the next section of my theoretical framework. For the purposes of this study, I conceptualize 21st century skills as a component of digital literacy. In the course of becoming digitally literate, students master 21st century skills.

Gilster (1997) famously began his text, *Digital Literacy* by stating, “digital literacy is about mastering ideas, not keystrokes” (p. 1). Rooted in traditional notions of text-based literacy, he emphasized the critical thinking implicit in digital literacy rather than technical skills. Building upon Gilster’s (1997) ideas of digital literacy, subsequent scholarship describes digital literacy as involving higher-order thinking skills within authentic contexts (Knoble & Lankshear, 2006; Martin, 2008; Voithofer & Winterwood, 2008). Specifically, digital literacy involves students “engaging in higher-order thinking within authentic contexts that are relevant to a student thriving academically, economically, politically, and culturally” (Voithofer & Winterwood, 2008, p. 4). Although definitions of digital literacy abound (see Johnson, 2008 for a review of definitions), Lankshear and Knobel’s (2008) definition of digital literacy as “meaning making mediated by texts produced, received, distributed, exchanged, etc., via digital codification” is most frequently cited in the literature (p. 5).

Although discussed separately from digital literacy, the acquisition of 21st century skills occurs through the practice of digital literacy. In this study I will utilize the 4Cs of 21st century skills identified by the NEA (2012): critical thinking, communication, collaboration, and creativity. While 21st century skills may be acquired without the use of technology (Landksher & Knobel, 2006), discussions of teaching these skills nearly always involve the use of technological tools (Assessment and Teaching of 21st Century Skills, 2008; ASCD, 2013; NEA, 2012; P21, 2011; West, 2012).
When paired with Martin’s (2008) definition of digital literacy, the 4Cs permeate the skills and abilities identified in the definition of digital literacy. Critical thinking is necessary for nearly every aspect of the skills listed in the definition: “identify, access, manage, integrate, evaluate, analyze and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others” (Martin, 2008, p.167). Communication is explicitly mentioned in the definition, as is creativity. Students can engage in collaboration during the enactment of any of the skills identified in the definition. The inclusion of 21st century skills within the framework of digital literacy provides an integrated view of technology in the curriculum.

**Stage-environment fit theory.** Stage-environment fit theory frames how I view the way technology is integrated into the classroom environment and the importance of this integration to meeting students’ needs and students’ academic success. Stage-environment fit theory suggests a mismatch between the school environment, including the classroom academic environment, and students’ needs results in negative outcomes (i.e. poor academic performance and failure to graduate from high school) (Eccles & Midgely, 1989; Eccles et al., 1993; Eccles & Roeser, 2011). Stage-environment fit theory suggests classrooms devoid of technology fail to meet students’ developmental needs such as their quest for understanding themselves and others (Eccles & Roeser, 2011). Classroom environments lacking technology are inconsistent with the environment outside of school in which technology plays a major role (Buckingham, 2008; Fieldhouse & Nicholas, 2008). According to Eccles and Roeser (2011), tailoring classroom environments to students’ needs involves ensuring curricular material and content are meaningful to students. Failing to match the classroom environment to students’ needs may result in negative outcomes such as declines in academic motivation (Eccles, 2012).
Overview of the Methodology

When determining which methodology I would employ for this study, I considered many different options. I toyed with the idea of a mixed method study and spent a lot of time reading about grounded theory. Ultimately, I decided that just as I lived alongside my participants, I want my readers to live alongside them, too. This seemed achievable only through the creation of an experience for the readers of this dissertation. Thus, narrative inquiry, a methodology rooted in experience and dependent on story, was selected and utilized (Clandinin, 2013; Clandinin & Connelly, 2000). In addition to its focus on experience and story, narrative inquiry is appropriate because it focuses on stories of experience at the boundaries of thinking narratively, in terms of small stories, and the grand narrative (Clandinin & Connelly, 2000).

Narrative inquirers work collaboratively with participants (Clandinin, 2013; Clandinin & Connelly, 2000; Connelly & Clandinin, 1990) and the success of the inquiry is predicated on the establishment of a reciprocal relationship of care between the participant and researcher (Connelly & Clandinin, 1990; Noddings, 1986). When working with participants in this study, I was (and still am) careful to maintain confidences and respect the boundaries we determined together (See chapter three for an explanation of these negotiations.). This caring relationship between the participant and researcher ensures the voices of both will be represented in the interpretation of the experiences examined in the inquiry (Connelly & Clandinin, 1990).

Selecting narrative inquiry provided me with a starting point, but felt incomplete. As I considered how I best process and share information, I realized that I needed to supplement my use of narrative. Apparent in the beginning of this chapter, I gravitate towards metaphor as a way of thinking through complicated ideas and situations. According to Lakoff and Johnson (1980), my preference for metaphor is not original. Metaphor is essential to storytelling and has been
used for this purpose since the beginning of mankind (Lakoff & Johnson, 1980). Because of this personal way of work, I sought a way to include the explicit use of metaphor in my data collection and analysis.

Deciding how to use metaphor in service of this study was easy. Since as long as I can remember, I’ve written poetry, an art form dependent on metaphor, when I needed to think something through. Poetry immediately came to mind as a natural fit for this study and me. Long nights of researching how to utilize poetry in a qualitative dissertation ensued. My research uncovered what my gut already knew, poetry in the service of research preserves the complicated mess of life’s experiences, resists oversimplification, and invites the reader to participate in the inquiry (Faulkner, 2009; Grisoni, 2008; Leggo, 2008). Throughout, I use poetry as both a data analysis and reporting medium, allowing me to share complicated experiences while encouraging high levels of interaction from the reader. Further explanation of poetry’s role in this study is shared in chapter three.

As I transcribed, read, and reread my data, I realized my analysis plan was missing a key component. Reporting just the “what” and “how” of technology usage seemed insufficient. I needed a systematic way to examine the integration of technology into the classroom. One of my professors told me early in my doctoral studies that you are always thinking about and working on your dissertation study, even when not sitting at your computer facing your data. Her words proved true when, over wine and expensive salads at the W Hotel, I was offered a solution to my problem. “Have you looked at the ISTE Standards? Maybe SAMR would help?” Across the table from me, the Director of Educational Technology for an urban school district placed the answer between us. It was infinitely better than the lonely breadbasket that had filled the space only moments before. My friend’s suggestion resulted in the use of the SAMR Model (Puentedura,
to examine the nature of the technology use within the narrative. The SAMR Model suggests there are four levels of technology integration in educational settings: substitution, augmentation, modification, and redefinition (Puentedura, 2013). Because it is a new model for examining technology integration, its use in peer-reviewed research is limited (Romell, Kidder, & Wood, 2014 is an exception), but it appears in recently published educational dissertations from various universities (i.e. Crookston Curran, 2015; Rowe, 2014; Strother, 2013). I chose this model despite its newness because it provides a much-needed structure for categorizing and defining the varying types of technology use I witnessed in my participants’ classrooms. The use of SAMR is further discussed in chapter three. Employed together, narrative inquiry, poetry, and the SAMR model provided a way to examine and describe experiences of technology use.

**Significance of the Study**

This study is significant because it responds to various calls for further research into technology integration in classrooms and fills gaps in understanding of technology use in schools (Judge, Puckett, & Mee Bell, 2006; Powell, 2007). Judson (2006) points out that most studies of technology use in classrooms focus not on how technology is used, but on how much is used. These studies are typically conducted through quantitative methods (i.e. Boser, 2013, Jackson et al., 2008; Valadez & Duran, 2007). This study adds to the limited number of qualitative studies in this area (i.e. Sanchez, & Salazar, 2012; Scott & White, 2013; Warschauer et al., 2004; Zhao, Pugh, Sheldon, Byers, 2002). Fitton, Ahmedani, Harold, and Shifflet (2013) refer to qualitative work as a “relatively new phenomena” in research on technology (p. 402). The discoveries from this study add to this new and growing area of understanding. This study also increases the amount of research existing that utilizes the SAMR Model. Discussed above, the SAMR Model
is an increasingly popular tool for analyzing technology integration in middle school classrooms (Crookston Curran, 2015; Rowe, 2014; Strother, 2013).

Findings from this study further add to the research base by providing a holistic view of technology integration in classrooms. Kerr (1991) suggests, “…if technology is to find a place in classroom practice, it must be examined in the context of classroom life as teachers live it” (p. 121 quoted in Ruthven, Hennessy, & Brindley, 2004). Living alongside participants, I examined technology within the context of the classroom and not in isolation.

By examining technology usage in middle school ELA classes, I considered the positioning of technology in relation to traditional literacy as called for by Judge et al. (2006). They state, “Researchers need to determine not only the nature and frequency of computer instruction occurring in classrooms but also the place of this instruction within the context of overall reading and mathematics instruction within classrooms” (p.59). My examination of stories of technology usage shed light on how technology fits within the larger curricular structure.

Through this study, I address several calls for more research on minority education and technology integration into high-minority, low-income classrooms. According to Delpit (1995), the creation of stories of successful technology integration into high-minority classrooms is an important tool for teacher educators. Delpit (1995) claims the deficit view of minority education that dominates teacher education comes from a lack of success stories available and shared in teacher education programs, “Seldom, however, do we make available to our teacher initiates the many success stories about educating poor children and children of color” (p. 178). At the beginning of data collection, I hoped this study would provide two success stories that could be used to illustrate successes in high-minority classrooms. Although the stories shared here are not
completely success stories, specific elements illustrate how technology can be used successfully in high-minority classrooms.

Powell (2007) cites a need for examinations of technology use in classrooms that primarily service minority students. She calls for studies examining the different ways technology is accessed and used in educational environments, in particular, she calls for studies paying attention to technology use by African American students, stating researchers need “to develop a template for African American technology use that is not based solely on deficit” (p. 33). Although this study does not suggest a template for technology use, it provides a deeper understanding of how technology might be successfully utilized in classrooms serving minority students.

Warschauer (2002) suggested the digital divide, which sets up a binary of haves and have-nots, is too simplistic to fully capture nuances in access to and use of technology in schools among different minority groups. The results of this study provide an in-depth look at technology use among minority students and capture details of access and usage.

Similarly, Ruecker’s (2012) narratives about the digital literacy practices of two minority high school students demonstrated how differences within minority communities are overlooked by large-scale studies. Ruecker claims narratives are vital because “Even large-scale qualitative studies like Selfe and Hawisher’s (2004) may erase some of the variations within a community” (p. 248).

Studies examining technology use in ELA are extremely small in number (i.e. Agee, Altarriba, Arnold, Meany, & Morton, 2009; Langer, 2001; McGrail, 2005; 2007; Ruthven, Hennessy, & Brindley, 2004). This lack of research indicates Selfe’s (1999) concern that ELA
teachers do not pay attention to technology and resist incorporating technology into the curriculum may be valid.

Composition teachers are culpable for the sustainment of an unfair system by not including technology into the ELA curriculum (Selfe, 1999). This lack of inclusion results in minority students who do not receive adequate instruction and experiences with technology. Selfe reminds us “literacy is always a political act as well as an educational effort” (p. 424) and that “As composition teachers, deciding whether or not to use technology in our classes is simply not the point- we have to pay attention to technology.” (p. 415). Selfe suggests, “We need additional research on how various technologies influence literacy values and practices and research on how teachers might better use technologies to support a wide range of literacy goals for different student populations” (p. 431). Findings from this study provide insight into how technology may influence literacy values and practices as well as support various literacy goals.

Although organizations and individuals call for the inclusion of technology in middle grades curriculum, particularly in classrooms serving black adolescent males (Fitton et al., 2013; Jackson et al., 2008; National Middle School Association [NMSA], 2010), few studies examine adolescents’ technology use. Similarly, examinations of middle school ELA classrooms are characterized by limited research. At this point in time, only three qualitative studies on technology integration in middle school ELA classes have been published (McGrail, 2005; 2007; Ruthven et al., 2004). Research on technology use in ELA classes is generally limited to large quantitative or mixed methods studies relying largely on surveys (i.e. Boser, 2013; Goldberg, Russell, & Cook, 2003; Langer, 2001; Purcell et al., 2013). No current research focuses, as this study does, on the voices and experiences of educators attempting to incorporate technology into the ELA curriculum.
**Definition of Terms**

**Classroom environment.** In this document, references to the classroom environment refer to both the physical space and the attitudes of the people who inhabit the classroom space.

**Digital literacy.** The process of “meaning making mediated by texts produced, received, distributed, exchanged, etc., via digital codification” (Lankshear & Knobel, 2008, p. 5).

**High-minority, low-income schools.** At this point in time, there isn’t a singular definition for high-minority and/or low-income schools. Each state defines “high-minority” and “low-income” schools differently. The Nation’s Report Card’s (2013) website defines schools as “disadvantaged minority” when they service a student body containing over 50% minority and low-income as determined by the percentage of free and reduced price lunches provided to the student body. This definition will be adopted for this study.

**Grand narrative.** Comprehensive explanations about experiences are grand narratives Lyotard (1979). These explanations are commonly created through research texts, popular media, and commonsense understandings.

**Little/small stories.** Local narratives often hidden in examinations of the grand narrative (Georgakopoulou, 2006; Pheonix, 2008; Squire, Andrews, & Tamoukou, 2008). These stories reveal exceptions and resistance to the grand narrative.

Limitations of the Study

I strove for clarity in my explanations of the processes in which I engaged during this study. This study may be evaluated in terms of trustworthiness (Hatch, 2002), transparency (Creswell, 2007), and verisimilitude (Bruner, 1991). When considering the hermeneutic tradition (Creswell, 2007; Gall et al., 2007), I admit the interpretations expressed through this text are unique. This same study, undertaken by a different researcher might yield different interpretations. This study is unique and limited because I am the research instrument and my past experiences and beliefs influence my interpretations of the data.

I recognize that I am a white woman from a middle class background conducting a study on black adolescents growing up in poverty. My white body defines my interactions with the world. This presents significant challenges since I am the research instrument for this study. During focus group interviews, I wondered if black student participants would have responded differently to me if I were a black woman and member of their racial community.

While I can read, study, and discuss the legacy of white supremacy in the United States and in education specifically, institutionalized racism and white cultural domination are difficult to resist and overcome. As I share my participants’ stories, I filter black experiences through a white lens. Certainly, there are people who will argue that I have no authority or right to do so. This debate is bigger than this dissertation study and will not be fully addressed here beyond to confirm that I understand the difficulties and have done my best to engage in a process free of racism, continually reflecting on how my racial identity may be shaping my understanding. My researcher’s journal was my primary tool for thinking through how my race impacted this study.

I also disclose my familiarity with integrating technology in a low-income ELA classroom and share some of the instructional decisions I made at the time. I also describe my
personal view on technology in the classroom including my strongly held belief that technology can be transformative.

It should also be noted that at the time of data collection, I worked for the district in which I collected data. I was employed in the district’s main office, leading the team in charge of ELA curriculum, instruction, and assessment for secondary schools. It is possible this position affected my interactions with the ELA teacher participants.

**Timeline**

Conducting a dissertation study is a long process. This study took over two years from inception to completion. Personal and professional changes impacted both the amount of time needed to bring this study to completion as well as how I experienced the data. I discuss the challenges of taking a long time to complete the study in chapter three. Figure 2 below shares the timeline this study followed.

**A Look Ahead**

Guided by the research puzzle presented again below, this dissertation provides an intimate look into the way technology is accessed and used in two urban middle school ELA classrooms.

What might I learn about teaching with technology from two middle school ELA teachers utilizing technology in a high-minority, low-income school? In what ways might participants’ stories mirror or differ from the grand narrative of technology use in high-minority, low-income middle schools? In what ways might this inquiry expand general knowledge of technology use in high-minority, low-income, middle-level classrooms?

Chapter two provides an in-depth examination of the literature influencing thinking and learning about technology in urban ELA classrooms as well as the theoretical underpinnings on
which this work rests. Chapter three describes in detail the methodology employed by this study, including information pertinent to data collection. In chapter four, I share stories about the teachers and students with whom I worked over the course of data collection. Although data is filtered through my ways of understanding, I made every attempt to remain true to the stories I heard, witnessed, and participated in. This dissertation concludes with chapter five, a discussion of the study’s significance and implications.

**August 2014- April 2014**
- Wrote dissertation proposal
- Obtained job in the main office of a high-minority, low-income urban school district

**May 2014-January 2015**
- Obtained permission from school district and school site to conduct research
- Recruited study participants
- Established research schedule and negotiated role with participants

**February 2015- June 2015**
- Collected data
- Wrote interim texts
- Began analysis

**July 2015-December 2015**
- Finished analysis
- Wrote narratives
- Left job at main office of a high-minority, low-income urban school district
- Joined leadership team at a high-minority, low-income urban charter high school

**January 2016- March 2016**
- Revised dissertation document

**April 2016**
- Defended dissertation

*Figure 2. Dissertation study timeline.*
Chapter Two: Discussion of the Literature

Overview of the Chapter

This chapter provides a discussion of literature the present study seeks to expand upon. First, the research puzzle is provided. Second, a brief discussion of the unique nature of research on technology in education is offered. Third, the literature informing this study is organized into six sections: the role of technology in education, technology use in minority, low-income schools, technology in the ELA classroom, technology in the middle grades, and urban teacher self-efficacy. Fourth, the theoretical underpinnings of the study consisting of culturally responsive teaching, digital literacy, and stage-environment fit theory are discussed. The chapter concludes with a discussion of how the theoretical underpinnings work together to create a base on which this study stands.

Research Puzzle

The following research puzzle guides this inquiry, is informed by the literature addressed below, and has roots in the theoretical underpinnings that follow:

What might I learn about teaching with technology from two middle school ELA teachers utilizing technology in a high-minority, low-income school? In what ways might participants’ stories mirror or differ from the grand narrative of technology use in high-minority, low-income middle schools? In what ways might this inquiry expand general knowledge of technology use in high-minority, low-income, middle-level classrooms?
Literature Review

Research on technology in education.

“We may have cause to be skeptical about the sci-fi versions of information superhighways and an impending future where we are all virtual shoppers.”

(The New London Group, 1996, p. 64)

The quotation above, from one of the first articles considering the role of technology in the teaching of literacy, was published in 1996 and illustrates how far technology has advanced in a relatively short amount of time. The authors’ skepticism regarding the future of online shopping probably seemed appropriate at the time of publication, but is outdated today.

Following Christmas 2012, 53% of Americans reported engaging in online shopping over the holidays (Wilke, 2013). Making purchases on the internet has moved from fantasy to reality in less than two decades. This serves as just one example of how rapidly technology has developed and changed our lives.

Davidson (2011) argues society is in a “transitional moment” due to technological advances (p. 11). She claims the average person is unaware of how fundamentally his/her life is changing due to rapidly advancing technology. I was thinking of Davidson’s argument one morning in my building’s elevator. I stood next to a man and woman dressed for work and carrying heavy looking satchels probably containing laptop computers. As the elevator descended, all three of us fiddled with iPhones connected by colored wires to tiny buds nestled in our ears. It occurred to me this scene would have looked completely different in the early 2000s, the decade of publication for many of the articles I read. In the early 2000s, smart phones, like online shopping, were part of the realm of science fiction and desktop computers dominated the workplace. In short, technology’s role in our lives was growing, but limited.
When preparing this chapter, I felt it important not to be blind to the changes both in technology’s capabilities and its role in our lives. Research published only a decade ago examined technology several iterations older than what is currently available. In addition, the context in which the research took place is fundamentally different from the world today. In 2004, people in elevators didn’t fiddle with iPhones. The Digital Futures Project (2013), a research group that examines technology usage in the U.S. each year, found technology use among Americans, particularly internet use, has exploded over the last thirteen years. In 2013, they found the amount of time adults spent online per week more than doubled compared to amounts reported in 2000. They also determined the ways Americans connect to internet has changed. In 2000, only 10% of Americans used a broadband intent connection, but, by 2013, this percentage had risen to 83%.

For educators, the swiftly changing nature of technology makes keeping up with changes difficult and akin to “running to catch a moving train” (Becker, 1998, p. 1). Schools struggle to keep pace with innovations (Becker, 1998; Wolfe, 2011). Despite the difficulty of keeping up with technology, the acquisition and implementation of technology in schools has steadily increased since President Clinton’s 1997 announcement that technology is a vital component of a contemporary education. The President claimed all classrooms and libraries should be wired for the internet by 2000 and all private homes should be wired by 2007 (Herrington, Hodgson, & Moran, 2009; Hoffman & Novak, 1998). The President’s speech focused national attention on the purchase and implementation of technological tools in educational facilities.

Currently, school districts in the U.S. spend about $56 billion dollars on technology each year (Johnson, 2012). This breaks down to about $400 per student (Johnson, 2012). This spending resulted in numerous technological resources in schools. Computers in particular are
plentiful. A recent national survey found one computer for every 3.8 students in public schools (Data First, 2012). By 2000, nearly 1000 schools employed a one-to-one laptop program (Dunleavy, Dertert, & Heinecket, 2007) and expansion of such programs promised to further reduce the computer-to-student ratio. In addition to computers, teachers report access to a wide variety of technology including LCD projectors, interactive whiteboards, and digital cameras (National Center for Educational Statistics [NCES], 2010). Ninety-three percent of teachers report the internet is accessible in their classrooms all day (NCES, 2010). Despite the quantity of up-to-date technological resources in schools, educators are, in many ways, still “running to catch a moving train” (Becker, 1998, p. 1). They struggle with barriers to access and technology’s incompatibility with traditional teacher-centered teaching models (Applebee & Langer, 2013; Boser, 2013).

Educational researchers examining technology also struggle to keep up. The cycle of educational research, including funding, planning, researching, and publishing, takes a considerable amount of time. Once findings from a research study are published, technological advances may render the study findings limited in utility or, in some cases, irrelevant. The continually changing nature of technology and the time-consuming process of educational research make poor bedfellows. Further complicating the act of conducting educational research on technology is the deluge of new technological innovations researchers face. It is impossible to examine each new technological program or tool. The fast pace and large quantity of technological innovations results in a dearth of research on technology in educational settings and leaves teachers with little information to make informed curricular decisions (Education and Technology, 2009).

Due to the limited amount of research studies on technology in educational settings, I
focused on research published within the last ten years (2003-2013). There are several exceptions to my 10-year rule. These include seminal studies such as those by Cuban (2001) and Becker (2000) that, despite their age, continue to be referenced by current researchers. Other studies disregarding this rule are included in the section on ELA and technology due to a limited amount of research in this particular area (i.e. Clark, 2000; Fan & Orey, 2002; Parr, 1999).

**The role of technology in education.** Lauded since the 1960s for its potential to revolutionize education (Martin, 2008), discussions of the importance of technology in education have increased in number and urgency in recent decades. According to a 2010 U.S. Department of Education publication, *Transforming American Education: Learning Powered by Technology*, technology is essential to teaching and learning. The publication likens the role of technology in education to technology’s centrality in everyday life. The plan suggests a “learning powered by technology” (p. vi) educational model in which technology serves several purposes, chief among them preparing students to be “active, creative, knowledgeable, and ethical participants in our globally networked society” (p. xii). Likewise, the current *National Education Technology Plan* (2010) suggests technology should be leveraged to create “empowering learning experiences for students” (p. x). The inclusion of technology into the curriculum is particularly important for preparing students for life after school. In 2008, five of the ten fastest growing professions were computer related (U.S. Bureau of Labor Statistics, 2005).

The goal of including technology into curriculum is summarized below by Cuban (2001) in one of the earliest studies on technology use in schools:

…advocates have pressed school boards and superintendents to wire classrooms and purchase new hardware and software, in the belief that if technology were introduced to
the classroom, it would be used; and if it were used, it would transform schooling. (pp. 12-13)

The internet promised to change traditional teacher-centered instruction in positive ways and nurture a more constructivist teaching stance among teachers that privileges student-centered learning (Cuban, 2001; Greenhow, Robelia, & Hughes, 2009; Herrington et al., 2009; Hicks, 2009). Technology, especially the internet, allows students to collaborate with peers in the classroom and around the world, conduct inquiry projects, and produce multimedia compositions. Despite technology’s potential, Cuban’s (2001) examination of two California high schools discovered computers used infrequently and in support of traditional teacher-centered instruction. Although over 60% of the 21 teachers in the study claimed technology changed their teaching, only four teachers demonstrated a shift towards student-centered pedagogy (Cuban, Kirkpatrick, & Peck, 2001). This may stem from the fact that less than 5% of teachers used technology regularly in instruction (Cuban, 2001). Cuban (2001) concluded the goals of technological advocates unmet.

Over a decade later, the dreams of technology advocates continue unrealized. Applebee and Langer’s (2011, 2013) examinations of writing instruction in secondary schools echo Cuban’s (2001) findings. Examining writing instruction in all subject areas, Applebee and Langer (2013) found technology most often used to support traditional, teacher-centered instruction. Teachers exchanged lectures for Power Point presentations and illustrations for photos on websites (Applebee & Langer, 2013). Similarly, Boser (2013) found students use technology in school most often for skill and drill practice supporting teacher-centered instruction rather than inquiry-based learning. In some cases, students didn’t use available technology at all. In their study, Banister and Reinhart (2011) examined the way technology was
integrated into middle school classrooms and found the majority of teachers used technological tools, but student use for learning was minimal.

The failure of technology to transform education may be due to the lack of effective professional development in technology. Teachers, even those already engaged in student-centered practices, need support successfully incorporating technology into their curriculums through professional development opportunities that take into consideration their needs and expertise (Clark, 2000; Hofer & Swan, 2009). The popular one-training-session-for-everyone model fails to meet teachers’ needs (Burns & Poleman, 2008; Clark, 2000; Liu, et al., 2016). The integration of technology into classrooms is most successful when professional development is offered in various formats and at differing levels to meet teachers’ individual needs (Burns & Poleman, 2008; Hughes, Kerr, & Ooms, 2005; Liu, et al., 2016). Teachers who feel proficient with technology and perceive support from others when integrating technology into their classrooms are more likely to use technology in instruction (Hughes et al., 2005; Langran & Alibrandi, 2008; O’Dwyer, Russell, & Bebell, 2005; Rose, 2016; Shapley, Sheehan, Maloney, & Caranikas-Walker, 2010; Swan & Dixon, 2006; Winschitl & Sahl, 2002). Unfortunately, in most school districts, technology is purchased and placed in schools without differentiated teacher supports or clear goals (Boser, 2013; Ringstaff & Kelley, 2002).

Poor quality teacher professional development on technology and unclear curricular goals for technology may soon be a thing of the past. The introduction of the Common Core State Standards (CCSS), which focus explicitly on the use of technology within the curriculum, may cause a shift toward student-centered pedagogy. The CCSS state secondary students must be able to:
Use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of three pages in a single sitting. (n.p.)

Applebee and Langer (2013) hope the explicit inclusion of technology into the curriculum through the standards may finally result in teachers using technology to transform education rather than reinforce traditional methods; however, research on constructivist teaching and technology suggest student-centered teaching practices will not automatically take hold with the inclusion of technology into the classroom. In some cases, technology use did shift teachers’ practices towards a co-learner model in which both the teacher and student engaged in learning practices with technology (Burns & Poleman, 2008; Park & Ertmer, 2008; Williams, 2005). Hughes et al. (2000) found incorporating technology into the classroom transformed the way participants taught. They engaged in teaching practices in which students and teachers acted as co-learners in the classroom through the use of technological tools, specifically through computer and internet use. These results echoed in the findings of participant surveys examined by Rakes, Flowers, Casey, and Santana (1999). They found teachers reported access to and use of technology increased their employment of constructivist practices. Not surprisingly, teachers who already held strong constructivists beliefs in O’Dwyer, Russel, and Bebell’s (2005) study used technology more often with students in practices consistent with these beliefs than other teachers in the study. These studies paint a clear picture of movement toward constructivist teaching through technology use, but these findings are not universal. Judson (2006) found teachers reported holding constructivist principals, but, when observed, their teaching was not consistent with constructivist teaching practices. Similarly, Windeschilt and Sahl (2002) found
widely available portable technology, specifically laptops, in a school doesn’t necessarily move teachers towards using constructivist practices.

**Technology Use in High-Minority, Low-income Schools**

**The digital divide.** Initially, digital divide research focused on physical access to technology (e.g. Powell, 2007). Access to technological tools such as computers and smart phones is not universal across the U.S. Inequalities to access first received attention in the 1990s with four reports conducted by the U.S. Department of Commerce titled, “Falling through the net: A survey of the ‘have-nots’ in rural and urban America” (1995). The studies documented on a broad scale access to technology by urban and rural Americans. As its title indicates, the report found low-income and minority Americans lacked the same amount of technology access as middle class white Americans (U.S. Department of Commerce, 1995). The reports’ creation of the verbiage, “have” and “have-not” became synonymous with the technology access divide. This binary of “have” and “have-not” based on socioeconomic status (SES) and race is commonly referred to as the “digital divide” (Reich, Murnane, & Willett, 2012; Reinhart, Thomas, & Toriskie, 2011; Warschauer & Matuchniak, 2010). Despite its wide usage, the origins of the term “digital divide” are unclear with various scholars and researchers attributing its coinage to different individuals (e.g. Hoffman & Novak, 1998; Powell, 2007).

Studies following the U.S. Department of Commerce’s (1995) report confirmed the Department’s findings and showed little change. In 1998, Hoffman and Novak conducted a study of technology ownership and usage by African Americans and white Americans. They found African Americans less likely to use a computer at work or personally own a computer than white Americans. The researchers attributed these differences to differences in education and income levels of participants. In 2012, one in five Americans did not to use the internet (Zuckhir
& Smith, 2012). A year later, 15% of American adults reported not using the email or the internet (Pew Research Center, 2013). Only 19% of these adults cite costs as the reason they don’t use email or the internet (Pew Research Center, 2013). Although these nonusers did not cite cost as a reason for not using email or the internet, there is a consistent relationship between internet use and income (The Digital Futures Project, 2013). Households making less than $30,000 are unlikely to have internet access (Zuckhir & Smith, 2012).

Implications of the digital divide for individual students. Examining trends in adult technology use is important for educators because national trends in computer ownership and internet connectivity are mirrored by schools (Valadez & Duran, 2007). Researchers have found unequal levels of access to and use of technology in schools based on the socio-economic status (SES) of the student population the school serves (Boser, 2013; Purcell et al., 2013; Warschauer et al., 2004; Zickhir & Smith, 2012). Paying attention to adult technology use is also important because it is indicative of adolescent use and experiences with technological tools. Growing up in a world dominated by technology, today’s adolescents are assumed to be technologically adept (e.g. Mullen & Wedwick, 2008; Taranto, Dalbon, & Gaetano, 2011); however, as indicated by studies on adult technology use, many adolescents grow up in homes devoid of technology (Department of Commerce, 1995). Consequentially, these adolescents have little technological competence (Facer & Furlong, 2001). In a study of 124 at-risk minority adolescents, Okwumabua, Walker, Hu, and Watson (2011) found 67% of participants lacked confidence in their use of computers. They reported discomfort regarding learning with computers and held negative attitudes towards online learning, a staple of many post-secondary educational programs. Ritzhaupt, Liu, Dawson, and Barron (2013) found similar results. They studied over
5,000 middle school students and determined low-income students were not as proficient using technology as their more affluent peers (Ritzhaupt, et al., 2013).

Studies indicate a positive and beneficial relationship exists between parent SES and technology use by adolescents (Jackson et al., 2008). In a study of adolescent technology use, Jackson et al. (2008) found the higher the parents’ income, the longer adolescents used technology. Researchers found adolescents who start using technology early in life earn higher grades in school than peers who start using technology later (Jackson et al., 2008). Similarly, Judge et al. (2006) found reading and math achievement scores higher for students with home computer access than those without. The impact of technology use may extend beyond secondary school. A study of college students found those from homes with average to high incomes and home access to computers before age 10 the most proficient and heavy users of technology in college (Ching, Basham, & Jang, 2005). This implies the effects of technology use as a child and adolescent linger at least into early adulthood.

The digital divide in schools. The low levels of technological access reported by minority and low-income adults are paralleled in schools servicing minority, low-income students. Researchers studying the digital divide in schools noted discrepancies between access to technology in higher and lower-income schools (Boser, 2013; Clark, 2000; Cuban, 2001). In a joint effort by the NWP, AP, and Pew Institute, Purcell et al. (2013) surveyed 2,000 secondary teachers about technology in the classroom. Teachers working in low-income schools reported their students have limited access to technology at home and at school. Similarly, Boser’s (2013) study of technology use in secondary schools found students at schools serving low-income students enjoyed less technological access at school than students at more affluent schools. These findings are echoed by the NCES (2006) which reported high-minority, low-income schools own
slightly less computers than white middle class schools. According to their research, schools containing 96% white students have one computer with internet access for every three students. In contrast, schools with less than 50% white students have one computer for every 4.1 students. In a study of 28 middle school teachers at a low-income middle school, all participants reported some access to technology, but expressed a desire for more technological resources in their classrooms (Clark, 2000).

Attempts by states and districts to rectify this disparity have resulted in some high-minority, low-income schools containing slightly more computers than more affluent schools, suggesting the gap in physical access to technology is lessening (Judge et al., 2006). In his meta-analysis of five years of digital divide research in the U.S. and Europe, Dijk (2006) found the distribution of technological resources across schools equal or favoring low-income schools. The increase in technological resources in high-minority, low-income schools has resulted in a shift from focusing on the quantity of technological resources in schools to the ways in which these resources are used. Inequalities in use are referred to as the second digital divide (Banister & Reinhart, 2011; Beers, 2004; Gorski, 2009; Makinen, 2006; Powell, 2007; Reinhart et al., 2011; Dijk, 2003, 2006).

The second digital divide. Wider access to technology in high-minority, low-income schools is an important step toward technological equality across schools, but equalizing access is only a first step. Gorski (2009) suggests “inequalities do not disappear when we add computers and Internet to classrooms” (p. 349). Gaps in opportunities to use technology and differences in usage among different socioeconomic and racial groups must be considered (Makinen, 2006; Valadez & Duran, 2007). In response to changes in physical access to technology, researchers have shifted their focus onto the second digital divide (Banister & Reinhart, 2011; Beers, 2004;
Gorski, 2009; Makinen, 2006; Powell, 2007; Reinhart et al., 2011; Dijk, 2003, 2006; Warschauer et al., 2004). Their findings suggest students at high-minority, low-income schools use technology differently than their peers at more affluent schools (Banister & Reinhart, 2011; Beers, 2004; Dijk, 2003, 2006; Gorski, 2009; Powell, 2007; Reinhart et al., 2011; Warschauer et al., 2004). Despite access, teachers of minority, low-income students typically fail to meaningfully utilize technology in the curriculum (Applebee & Langer, 2013; Cuban, 2001). As a result of this failure, Dijk (2006) found the difference in technological skill level of students at high-minority, low-income schools and those at more affluent schools is substantial and increasing. He suggests the second digital divide, focusing on how students use technology, is wider than the first digital divide that centered on access (Dijk, 2006).

NCES (2010) reported significant differences between low-income and more affluent schools’ technology usage. They found 83% of teachers at low-income schools report their students use technology to learn or practice basic skills compared to 61% of teachers in middle-class and affluent schools. Overall use of technology by teachers in low-income schools was less than those at higher income schools. Thirty-six percent of high poverty teachers reported their students used technology to develop and present multimedia presentations compared to 47% of teachers at middle-class and affluent schools. The differences they found in how teachers use technology to communicate with students and parents is striking. Only 17% of teachers at low-income schools use email or a list-serve to send information to students and 48% use communicate with parents with these tools. In middle-class and affluent schools, 92% of teachers use email or a list-serve to communicate with students and parents. Class and teacher websites, not as popular as email or list-serves as a communicative tool, are used by only 18% of teachers in low-income schools compared to 36% of teachers at middle-class and affluent schools.
Other researchers found similar differences in technology use between low-income and higher-income schools. Valadez and Duran (2007) found teachers of low-income students less likely to use technology for creating instructional materials or for strengthening instructional practices than teachers at more affluent schools. Not surprisingly, minority students report few hands-on experiences with technology (Boser, 2013) and resist teacher-centered technology use (Degennaro, 2008). Based on their examination of class wikis, Reich et al. (2012) determined students at low-income schools rarely engaged in online collaborations with peers. Through interviews they also learned teachers were more likely to use wikis with higher tracked students than those in lower tracked classes which typically consist of larger numbers of minority and low-income students. Technology use that does occur in high-minority, low-income schools often consists of requiring students to use kill-and-drill software programs or online activities that support teacher-centered instructional practices (Attewell, 2001; Banister & Reinhart, 2011; Becker, 2000; Boser, 2013; Cuban, 2001; Judge et al., 2004; Warschauer et al., 2004). Only one study found teachers in a low-income school consistently using technology in student-centered ways (Banister & Reinhart, 2011). All of these teachers took part in a social justice program intent on implementing teaching methods supportive of social justice (Banister & Reinhart, 2011). Summer camp instructors in Scott and White’s (2013) study also experienced success with technology and minority, low-income students. In their study, 41 female high school students attending a technology-themed camp experienced empowerment through the use of technology, an avoidance of deficit thinking by their teachers, and the use of culturally responsive teaching practices.

These successes appear rarely in the research, perhaps because teachers in minority and low-income schools indicate institutional barriers prevent them from integrating technology into
their classrooms in meaningful ways (Purcell et al., 2013). One such barrier is computer-based testing. Most high-minority, low-income schools are identified by their districts and states as low performing, often resulting in additional testing of students (Kozol, 2005). Much of this testing is internet-based and requires a computer. These tests commandeer technological resources in high-minority, low-income schools and prevent teachers from accessing them for instruction (Ruecker, 2012).

A lack of training on use of technological tools presents another barrier. Teachers in high-minority, low-income schools are less likely to receive training on technological tools than teachers in higher income schools (NCES, 2002). Low-income schools are also less likely to have a technology specialist onsite to support teachers (NCES, 2002). When teachers try to integrate technology into the curriculum, they often struggle to gain access to technological resources, particularly computer labs (Zhao, Pugh, Sheldon, & Byers, 2002). Most schools contain computer labs, but the physical separation of computers from classrooms renders seamless integration of technology into curricular activities difficult (Becker, 1998, 2000). Computer access within high-minority, low-income schools is severely restricted due to district and/or state mandated computer-based testing that tends to occur more frequently and broadly at low-income schools in which many more students struggle academically than at middle-class and affluent schools (O’Dwyer et al., 2005; Purcell et al., 2013; Ruecher, 2012; Warschauer & Matuchniak, 2010). Teachers responding to Hohlfeld, Ritzhaupt, and Barron’s (2010) survey indicated that school policies for checking technology out for classroom and individual student use restricted access and prevented students from using the tools available. Technology use is further restricted in low-income schools by internet blockers and slow internet connection speeds (O’Dwyer et al., 2005; Purcell et al., 2013; Warschauer & Matuchniak, 2010). Students of all
incomes levels claim institutional barriers restrict their access to and use of technological resources, specifically cell phones, which they feel can have academic purposes (Spires, Lee, Turner, & Johnson, 2008). Instead of placing restrictions on technology, students want schools to reflect the technology-infused world in which they live (Spires et al., 2008).

Barriers to technology use in high-minority, low-income schools are problematic for the successful incorporation of technology into the curriculum and fail to prepare students for the modern workplace that is dominated by technology (Bolt & Crawford, 2000; Lankshear & Knobel, 2008; Servon, 2004). Tettagah and Mayo (2005) claim using technology for low-level intellectual tasks serves only to prepare students for jobs in the service economy. They suggest educators prepare students for jobs that involve the design, development and evaluation of information technology. Voithofer and Winterwood’s (2010) study of 33 educators from high-minority, low-income school settings found teachers motivated to incorporate technology into their curriculum successful in doing so, suggesting it is possible for teachers in such settings to successfully integrating technology into the curriculum.

Despite the above cited research studies indicating low-income students possess less technological skill and engage in fewer experiences with technology than affluent students, this one storyline of technological experience may fail to represent all low-income students (Ruecker, 2012). In a small-scale qualitative study, Ruecker (2012) found not all minority low-income students experience technology usage the same way. In her examination of Latino students, Ruecker (2012) found although students belonged to the same socioeconomic and racial group, they experienced technology in different ways ranging from occasional social use to heavy academic use depending on factors independent of socioeconomic status and race. Warschauer (2002) claims the notion of a binary divide between the haves and the have-nots is inaccurate and
patronizing as it fails to value the social resources of diverse groups. Both Ruecker (2012) and Warschauer (2002) assert technology access and use is a complex matter devoid of a single mitigating factor like socioeconomic status or race. Technology access and use do not exist in a vacuum; rather, they are tied to economic forces and function across multiple contexts such as culture, politics, and location (Pandey, 2006).

**Technology and the ELA Classroom**

Problems of the second digital divide are exacerbated by the lack of technology integration in ELA classrooms (Beaufort, 2000; Selfe, 1999). Resistance to incorporate technology into the ELA curriculum may be due to teachers’ nostalgia for printed texts (Beaufort, 2000; Selfe 1999). Selfe (1999) suggests composition teachers are particularly resistant to technology because they view it as separate and antithetical to the teaching of literacy. For these teachers, technology isn’t part of literacy; it’s a distraction that diminishes the amount of time and energy spent on literacy instruction.

By allowing technology into the ELA curriculum, specifically into the teaching of writing, teachers must rethink how they conceptualize literacy and writing (Kress, 2003). Compositional scholar, Victor Villanueva, stated, “[W]e’re going to have to think about text differently as we move forward” and advocates rethinking the characteristics of text in light of digital compositions (Aronson, 2013, p. 11). Hyperlinks, embedded audio and video, as well as images give texts dimensions printed pages can’t provide (Kress, 2003). Additionally, digital texts can be nonlinear, allow for continuous revision, and invite interactions from others via online publication (Karchmer-Klien, 2013). Teaching writing with technology prepares students for the demands of the writing in the workplace (Goldberg, Russell, & Cook, 2003) where the visual layout of documents is both important and learned (Beaufort, 2000). Such a seismic shift
Resistance to change may be the root of why two studies conducted over a decade apart and examining technology use in ELA classes yielded nearly identical results. The studies by Cuban (2001) and Applebee and Langer (2013) indicated teachers most often used computers as typewriters in ELA classes. Despite the increase in availability of technological tools, writing instruction in ELA classes is still conducted with paper and pencil (Graham & Harris, 2013). In fact, the teaching of English remains relatively unchanged since its original inclusion in the curriculum (Yagelski, 2006).

Examining the role of technology in ELA classes is complicated by the fact research on technology in ELA classes is very limited. Practitioner journals overflow with “how-to” articles regarding technological activities for ELA classes (e.g., Insinnia, & Skarecki, 2004; Kuroly, 2004; Marshall, 2016; Mullen & Wedwick, 2008; Pope & Golub, 2000; Taranto, Dalbon, & Gaetano, 2011; Wan, Ward, & Harper; 2010), but research on technology use in the ELA curriculum is scarce. Two studies examined technology usage in ELA classes in conjunction with other content areas (Howes, Hamilton, & Zaskoda, 2003; Ruthven, Hennessy, & Brindley, 2004). Howes et al. (2003) found students recognized connections between literature and science through the use of tasks mediated by technology, but focused on students’ understanding of relationships between the content areas rather than on literate practices. Ruthven et al.’s. (2004) study of secondary students in England examined teachers’ use of technology in ELA, math, and science classes. They found teachers perceived technology fostered student self-efficacy and encouraged peer support.
Only one researcher has examined the role of technology generally in ELA classrooms. McGrail (2005, 2007) examined technology use within ELA curriculums in middle and high schools located in urban and suburban areas. She found several commonalities despite differences in grade levels and locations. Teachers worried about the physical management of technology and the decrease in convention usage by students composing on computers (2005). She also found laptop use in ELA classrooms limited by physical constraints (i.e. outlets and power cords needed to charge laptops during the day, desk space to spread out the laptops and texts students’ assignments required) (2007). Administrators failed to address teachers’ concerns and seemed only to care computers were used, not about how they were used (2007). Although McGrail’s studies shed light on some of the challenges and perceptions of ELA teachers using technology, her findings alone provide little insight into how technology is being used in ELA classrooms at large.

Most researchers examining technology in the ELA classroom have focused specifically on technology’s role in writing instruction. This research on technology and writing is a bit more plentiful than the above-mentioned areas although it is still among the “least studied problems” in ELA (Juzwik, et al., 2010). Writing with technological tools is lauded for the ease with which students can collaborate on writing tasks though a shared user interface such as wiki pages or Google Drive (Beaufort, 2000; Bledsoe, 2009; Grabill & Hicks, 2005; NWP, 2010). Through the internet, students can access collaborative tools from any location and write not just with one another, but with people from around the world (Kajder, 2004; NWP, 2010). Writing using technology, particularly the internet, allows students access to an audience beyond the teacher, providing an authentic purpose for writing in addition to the traditional purpose of teacher evaluation (Beaufort, 2000; Grabill & Hicks, 2005; NWP, 2010).
Researchers indicate writing with technology produces a myriad of positive outcomes for students. A research study on collaborative projects in ELA classes suggests students assume greater academic responsibility when using technology (Fan & Orey, 2002). Gulek and Demirtas’s (2005) study of middle school students found computer use during writing produced better compositions and increased students’ motivation to write. An increase in motivation when writing with technology was also noted by Grisham and Wolsey (2006) who examined an online discussion of a class novel and found student interactions online more probing and thoughtful than face-to-face interactions about the text. Also examining online interactions centered on writing, students in Adelman’s (2003) study of online writing groups reported feeling positive about the online environment and more comfortable discussing their texts than in face-to-face situations.

Several studies examine writing with technology’s impact on formal assessments and many indicate students who write with technology perform better on writing assessments than peers who write in more traditional ways (Lowther, Ross, & Morrison, 2003; Silvernail & Gritter, 2007). When studied over time, using word processing technologies to write produces a greater increase in writing achievement among students in grades 1-12 than writing with pencil and paper (Bangert-Drowns, 1993; Goldberg et al., 2003; Morphy & Graham, 2012). These finding are not universal. Cramer and Smith (2002) did not discern a significant difference in writing achievement between students using and not using technology.

Another important finding in research on technology in ELA classes is the fact students typically fail to recognize the connection between literacy practices mediated by technology inside of school and literacy practices outside of school (Agee et al., 2009; Cheville & Finders, 2008; National Commission on Writing, 2008). In a 2008 study by the National Commission on
Writing, 60% of adolescents surveyed didn’t view text messages, emails, and instant messages as writing. Recognizing the connection among technology, in-school, and out-of-school literacies is important for students because strong literacy skills positively impact technology skills (Dijk, 2006). Research indicates high levels of traditional literacy translate into high levels of digital literacy (Dijk, 2006). This finding suggests strengthening students’ traditional literacy skills may strengthen their skills using technology. Digital literacy, discussed in detail in the following theoretical framework, plays a pivotal role in post-secondary institutions and the workplace (Schriver, 2012).

**Technology in the Middle Grades**

…learning experiences are greatly enhanced when all students have the technology to access rich content, communicate with others, write for authentic audiences, and collaborate with other learners next door or across the globe. (NMSA, 2010, p. 16)

The above quotation from *This We Believe* by the NMSA describes how technology can enhance teaching and learning for middle level students. In order to best teach these students, the NMSA claims, “all educators must become proficient in using technology and integrating it throughout the curriculum” (NMSA, 2010, p. 24). The NMSA (2010) calls for regular access to digital tools for middle level students and claims the use of technology in the middle grades develops higher order thinking skills. This call echoes the one made ten years prior by Jackson and Davis (2000). They called for a middle school curriculum relevant to adolescents and based on how they learn best (Jackson & Davis, 2000). They specifically called for greater inclusion of technology into middle-level classrooms in order to build the curriculum they envisioned (Jackson & Davis, 2000).
Accustomed to using computers, tablets, and various other technological tools, adolescents process information quickly, use trial and error to learn new skills, connect with graphics before texts, enjoy challenging quests, desire collaboration, and expect class assignments clearly relevant to the world outside of school (Deubel, 2006; Prensky, 2010; West, 2012). Middle level students indicate technology helps them with organizational skills, information gathering, and the completion of innovative academic tasks (Fitton, Ahmedani, Harold, & Shifflet; 2013). In a study of 70 middle school students, Wolfe (2011) found students felt they learned best when using technology.

For many of today’s middle school students, technology is ubiquitous in adolescence. According to recent research, 11-to 14-year-olds spend over twice as much time on non-school computer use than 8- to 10-year-olds (Rideout, Foehr, & Roberts, 2010). Even students without ready access to technology find ways to use technological tools. Ahn (2011) found middle school students without home internet access managed to create and maintain profiles on social media sites by accessing the internet in creative ways, often by using internet-enabled cell phones and iPods. This determination to find ways of engaging in activities mediated through technology illustrates the importance of technology in the lives of today’s adolescents. When asked what life would be like without technology, students in Fitton et al. (2013) study could not answer the question. They conceptualize technology as part of life, not an extra that can be removed.

Use of technology among adolescents and young adults is widespread. A 2013 study found 99-100% of Americans 24 years-old or younger use the internet (The Digital Futures Project, 2013). In 2011, 74% of 12-14 year olds owned a computer and 93% can access a computer at home (pewinternet.org). Additionally, 37% of all teens (12-17 years old) owned a smart phone (pewinternet.org). Access to technology translates into long periods of time spend
using digital media and the internet. Rideout, Foehr, and Roberts (2010) found 11-to-14-year-olds spent about nine hours a day with digital media. These long periods of technology use are crammed full of overlapping uses (Fitton et al., 2013). For example, students will work on homework, listen to music, and communicate with friends simultaneously through technology (Fitton et al., 2013). By multitasking, adolescents consume almost 12 hours’ worth of media content in just nine hours (Rideout et al., 2010). The quantity of time spent using technology is higher for 11-to-14-year-olds than any other group between the ages of 8 and 18 and coincides with the transition into adolescence (Rideout et al., 2010).

Not all adolescents enjoy frequent access to technology, and not all adolescent groups use technology the same way and with the same frequency. Rideout et al. (2010) determined adolescents from low-income and low-education households less likely to have internet in any capacity. Low-income students were more likely to use their cell phone as the only point of internet access than more affluent students (Rideout et al., 2010). In a rare qualitative study of technology use by adolescents, Jackson, Zhao, Kolenic, Fitzgerald, Harold, and Von Eye (2008) found African American males used technology less than other ethnic groups, while African American females used the internet more than any other ethnic group. Girls of all ethnicities used the internet for academic purposes and cell phones to communicate more often than boys. Generally, boys viewed technological tools as machines, toys, and high-tech calculators while girls perceive technological tools as means to communicate (Christie, 2005).

Despite access and usage differences, interactions through online social media sites figure prominently in adolescents’ lives. In her examination of over 700 teenagers and their parents, Ahn (2011) found lacking computer access at school and home did not prevent low-income students from maintaining profiles on social networking sites. Their ability to find a way to
maintain social networking profiles regardless of internet connectivity at home and school suggests the importance of online interactions to adolescents. Adolescents “live and interact in cyber cliques” and use digital interactions to explore their place in the world (Fitton et al., 2013, p. 408). Moje et al.’s (2008) study of 1,000 urban adolescents found students read and write outside of school to gain social capital (i.e. maintain relationships, build identities, etc.). The prevalence of social interactions through technology among adolescents suggests technological tools may provide a way to meet the need for relatedness.

Fitton et al. (2013) and Pruden, Kerkhoff, Spires, and Lester (2016) found the need for competence might also be met through technology usage. In these studies, adolescents reported feeling good about learning how to do new things on the computer, exhibited increased self-esteem and self-efficacy. Students in Fitton et al. (2013) also claimed enjoying the fact they possessed an understanding of technology superior to many of the adults in their lives.

When examining the impact of technology on academic achievement for adolescents, studies are conflicted on whether technology improves students’ academic achievement or not. Ringstaff and Kelley (2002) found students utilizing computers frequently in the classroom outperformed their peers on standardized tests. Brown (2016) also determined technology improved performance. He found middle school students in a one-to-one e-reader program outperformed peers on standardized tests. Conversely, Silvernail and Gritter (2007) found no substantial gains in overall standardized tests scores following the implementation of a statewide one-to-one laptop program in all middle schools. Similarly, Hur and Oh (2012) and Shapley, Sheehan, and Maloney (2011) determined a laptop program failed to improve students’ academic performance. Gulek and Demirtas’s (2005) examination of academic performance and a one-to-one laptop program implemented in middle schools conflicts with other studies. These
researchers found the laptop program consistently produced students who made significant academic gains compared to peers not using laptops (Gulek & Demirtas, 2005).

Contradictory findings regarding technology’s inclusion in schools extend to technology’s impact on student responsibility. Downes and Bishop (2012) and Hur and Oh (2012) found students and teachers report an increase in academic engagement and responsibility following technology use in schools. Similarly, Singleton (2016) found greater engagement and critical thinking skills among students who microblogged verses peers engaged in traditional writing practices. Conversely, Ma, Lu, and Turner (2007) found students using computers more likely to cheat on academic tasks than students not working with technology. Many students engaging in this digital cheating failed to realize the wrongness of their actions (Ma et al., 2007).

When it comes to technology in middle school classrooms, quality of the activity is more important than quantity of time spent using the technology (Lei & Zhao, 2007; Tamim, Bernard, Borokhovski, Abrami, & Schmid, 2011). In their meta-analysis, Tamim et al. (2011) found technology used only to deliver content less effective at positively impacting student achievement than technology used in activities supporting instruction. Lei and Zhao (2007) found students who spend a lot of time using technology in class show less academic improvement than students who do not use technology as heavily. They attribute this difference to the fact students using technology were not engaged in intellectually challenging tasks (Lei & Zhao, 2007).

**Theoretical Underpinnings**

This study is grounded in multiple theoretical frameworks: culturally responsive teaching (Delpit, 1994, 1995; Gray, 2000; Irvine, 2002; 2003; Ladson-Billings, 2006), digital literacy (Gilster, 1997; Knobel & Lankshear, 2006; Martin, 2008), and stage-environment fit theory.
Together, these theories provide a way for me to examine the way students are taught (culturally responsive teaching), the role of technology in the ELA curriculum (digital literacy), and the way technology use may meet adolescents’ needs (stage-environment fit theory). Each theory is described in detail below.

**Culturally responsive teaching.** Culturally responsive teaching (CRT) reflects the idea that “Culture is at the heart of what we do in the name of education” (Gray, 2000, p. 8). Ladson-Billings (1994) defined CRT as “a pedagogy that empowers students intellectually, socially, emotionally, and politically by using cultural referents to impart knowledge, skills, and attitudes” (p. 18). Aiming to empower students, CRT is “intimately tied to relationships, activities, spaces, and times” (Moje & Hinchman 2004, p. 339).

In the U.S., white middle class norms dominate the classrooms. The influence of these norms and values, also referred to as culture, on classroom practices and students’ experiences cannot be overstated. Often they clash with students’ home norms and values. Heath’s (1982) study is an example of what might occur when school and home norms and values aren’t in concert. In her study, Heath found African American students failed to respond to the questions of their white teachers because they didn’t understand the questioning style being used, not because they couldn’t supply the answers.

Rooted in Friere’s (1970) ideas of social justice, CRT emphasizes the importance of understanding the cultural history and political situation of students and using those understandings to inform instruction (Delpit, 1994, 1995; Gay, 2000; Irvine, 2002, 2003; Ladson-Billings, 2006). In an ELA classroom, Singer Early and DeCosta (2012) suggest teachers employ CRT by explicitly teaching what they term “genres of power” (p. 21). For example, the college admission essay is one “genre of power” about which minority, low-income students
require direct instruction. Singer Early and DeCosta state that many minority, low-income students approach the college admission process from a place of deficit compared to their white, middle-class peers because they lack parents and community members equipped to help them with the writing of their essays.

Adeptness with technological tools presents minority, low-income students at a similar disadvantage. Adults in students’ lives outside of school often lack understanding and access to technology and are unable to assist students in the acquisition of technological skills (Jackson et al., 2008). These inequality in technological understanding are seen in the workplace where African-American women, who typically attend high-minority, low-income schools, hold only eight percent of computing jobs in the U.S. (U.S. Department of Labor, 2009). Research by Scott and White (2013) suggests this small percentage can increase with the use of CRT in high-minority, low-income schools. They found that when taught in culturally responsive ways, urban girls created meaningful content and comprehended the value of technology in their lives. Employing CRT strategies in conjunction with the implementation of technological tools can provide minority, low-income students access to and an understanding of technology needed to succeed in the world outside of secondary school.

**Digital literacy.** Functional literacy used to refer to the ability to read and write, but with the inclusion of technology into everyday life, reading and writing alone are no longer sufficient skills to function successfully in today’s society (Rantala & Suoranta, 2008). Digital literacy, “meaning making mediated by texts produced, received, distributed, exchanged, etc., via digital codification” (Lankshear & Knobel, 2008 p. 5), is now an essential component of functional literacy (Rantala & Suoranta, 2008).
The inclusion of technology into discussions of literacy first occurred when The New London Group (1996) suggested opening up the definition of literacy to include ways to read and write beyond printed and bound pages. In 2008, NCTE embraced the ideas of The New London group by publishing a definition of multiple literacies that claimed a literate person must possess a “wide range of abilities and competencies” (np).

First coined by Gilster in 1997, the term “digital literacy” refers to more than knowing how to manipulate specific technological tools. Instead, it is a way of making meaning much like reading traditional paper-based texts. Gilster suggested hypertext represents a new type of rhetoric that includes texts created and consumed via digital networks (i.e., a webpage). Making meaning of hypertext and other digital compositions such as podcasts, multimedia presentations, etc. requires abilities identified by Martin (2008), “identify, access, manage, integrate, evaluate, analyze and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others” (p. 166-167). As Martin’s (2008) listing suggests, digital literacy is more than knowing how to use technological tools (Gilster, 1997; Knobel & Lankshear, 2006; Voithofer & Winterwood, 2008). Rather, critical thinking and the ability to use a set of cognitive tools is at the heart of digital literacy (Gilster, 1997: Johnson, 2008). Digital literacy includes knowing when to use a non-digital source as well as when to use a digital one (Bawden, 2008). Digitally literate teachers only use technology when it adds to the teaching and learning occurring in the classroom (Kajder, 2004).

21st century skills. For decades, the 3Rs, reading, writing, and arithmetic, dominated discussions of education (NEA, 2012). Focused on content, understanding these three areas of study alone was considered sufficient for students to develop into productive citizens (NEA, 2012). In the 21st Century, mastery of these contents alone is inadequate. Due to technology,
content is searchable online (Selfe, 1999) and business is a global affair (West, 2012). In this new global society, success in the world outside of school requires a set of flexible mental skills. This shift in focus from the 3Rs to skills applicable across content areas resulted in an explicit focus on critical thinking, communication, collaboration, and creativity—the 4Cs (Assessment and Teaching of 21st Century Skills, 2008; ASCD, 2013; NEA, 2012; Partnership for 21st Century Skills, 2011).

These 21st Century Skills are addressed separately from digital literacy in scholarship despite the fact they are embedded in definitions of digital literacy (Gilster, 1997; Landksher & Knobel, 2006; Martin, 2008). Critical thinking involves inductive and deductive reasoning, analyzing how parts interact in a larger system, synthesis and analysis of information, and the ability to evaluate information, beliefs, and arguments (Partnership for 21st Century Skills, 2009). Communication in the 4Cs emphasizes the ability to be clearly understood across mediums such as email, discussion boards, video, etc. (NEA, 2012). Collaboration is defined as the ability to demonstrate flexibility, assume shared responsibility for tasks, and interact respectfully with diverse individuals and teams (Partnership for 21st Century Skills, 2009; NEA, 2012). The creativity referenced in the 4Cs includes working creatively with others and implementing innovations (Partnership for 21st Century Skills, 2009). These four skills apply to all content areas and provide a basis on which students develop habits of mind that enable them to succeed in an ever changing society.

**Stage-environment fit theory.** Adolescence, a notoriously difficult stage of development (Southern Regional Education Board, 2002), is made more challenging when the environment in which adolescents function fails to match their unique developmental needs (Eccles & Midgely, 1989; Eccles et al., 1993; Eccles & Roeser, 2011). Optimal school environments provide
adolescents with a safe space, termed “zone of comfort,” to explore desires and issues while challenging them in ways that foster intellectual growth (Eccles, 2012, p. 13). At school, educators should provide students with the “cognitive, social, and ethical skills necessary to be proactive citizens in a world that demands tolerance, compassion, and wisdom” (Eccles, 2012, p. 4).

Unfortunately, some school environments fail to meet students’ needs (Eccles & Midgley, 1989). For example, the urban middle schools in the district in which participants for this study teach are typically plain, institutional, and impersonal environments where students experience a succession of brief classes (45 minutes) full of over 30 students each. A mismatch between the needs of students and the opportunities afforded them by their social environments may result in negative psychological changes and is termed stage-environment fit theory (Eccles & Midgely, 1989; Eccles, et al., 1993, Eccles & Roeser, 2011). Negative psychological changes manifest themselves in a myriad of ways: lack of engagement in school activities, academic failure, and dropping out of school (Eccles & Roser, 2011).

When examining technology in schools and classrooms, stage-environment fit theory provides a lens through which I can examine in what ways students’ needs are or are not addressed by their school environment. Although equal home access to technology is not enjoyed by all adolescents, those typically without access still manage to create and maintain social media profiles (Ahn, 2011) and access the internet through cell phones (Rideout et al., 2010). For students with some or limited access to technology, the inclusion of technology in the classroom would provide students with a learning environment matching the way they think and function outside of school (Deubel, 2006; Buckingham, 2008; Fieldhouse & Nicholas, 2008). For students without access to technology, the inclusion of technology in the classroom would provide them
with experiences using digital tools and potentially help them gain the digital literacy and 21st century skills necessary for success in the world beyond school.

**Synthesis of the Theoretical Underpinnings**

Taken together, the theoretical frameworks undergirding this study, culturally responsive teaching (Delpit, 1994, 1995; Gray, 2000; Irvine, 2002; 2003; Ladson-Billings, 2006), digital literacy (Gilster, 1997; Knobel & Lankshear, 2006; Martin, 2008), and stage-environment fit theory (Eccles & Midgely, 1989; Eccles et al., 1993; Eccles & Roeser, 2011) provide a strong foundation from which a holistic examination of experiences of technology use in high-minority, low-income ELA classrooms may be explored. Through the use of these frameworks, I will consider teaching and learning experiences in light of students’ home cultures (culturally responsive teaching). At the same time, I will be attuned to the teaching of skills needed for students to grow into successful adults in a digital world (digital literacy). Considering stage-environment fit will help me understand the potential impact of the classroom environment on the teaching and learning I experience.
Chapter Three: Methodology

Overview of the Chapter

In this chapter, I first discuss my justifications for this study and then I describe how narrative inquiry shapes and guides the enactment of this study. While poetry appears in previous chapters, here I explain my use of poetry as a research tool. The chapter concludes with detail information regarding the specific research design and the challenges the passage of time posed for this study.

Research Puzzle

The following research puzzle reflects my wonder about the experiences of ELA teachers in high-minority, low-income schools who utilize technology in their classrooms as integral part of their pedagogy:

What might I learn about teaching with technology from two middle school ELA teachers utilizing technology in a high-minority, low-income school? In what ways might participants’ stories mirror or differ from the grand narrative of technology use in high-minority, low-income middle schools? In what ways might this inquiry expand general knowledge of technology use in high-minority, low-income, middle-level classrooms?

Justifications

Clandinin (2013) suggests research puzzles, focused on a particular wonder and rooted in personal, practical, and social justifications, guide narrative inquiries rather than singular questions. She argues these justifications make clear the purpose and value of a narrative study, removing it from the realm of a simple story and into that of serious research. In preparation for this study, I thought, journaled, and talked a lot about why I wanted to conduct this particular study. I remember one conversation with a colleague. “Urban schools face a lot of challenges.
Why study technology?” he challenged. Conversations such as this pushed me towards a coherent answer. In the sections below, I articulate my justifications.

**Personal justification.** The photo below was taken of my classroom workspace in 2010.

![Classroom workspace](image)

*Figure 3. Classroom workspace.*

The wire stretching from outside of the photo to the laptop was the Ethernet cable that provided me with internet access. At the time, Wi-Fi didn’t work in my classroom. Clearly, this was not an ideal setup. I was constantly maneuvering around the cable and implemented a strict rule forbidding students to walk over or under the cord. I tried moving my laptop closer to the Ethernet outlet, but once I did that, I couldn't connect to the digital projector. The cord connecting the projector and computer was very short. If I moved the projector, it wouldn’t line up correctly with the screen mounted on the wall. Ultimately, I settled for the situation above. Technological tools were available, but ease of use was lacking.

This is an example of my first-hand knowledge of the difficulties inherent in technology integration in high-minority, low-income, middle-level ELA classrooms. In this case, technological tools were available, but the infrastructure for using them was not. My experiences
include lacking an adequate number of computers, limited internet connectivity, and student unfamiliarity with how to use digital tools. In addition to these challenges, I experienced success with technology. The poem in chapter one gives one example. In another instance, a student with severe ADHD settled down and focused as soon as he began working on a podcast. Using technology helped him focus and resulted in higher quality work. My lived experiences of both challenges and successes with technology integration in a high-minority, low-income middle school shape my interpretations of experiences in this study. Leggo (2008) suggests, “We need to know our stories before we can attend to the stories of others with respect and care” (p. 92). Examining and understanding my experiences- my story- was essential to conducting this inquiry.

Practical justification. Clandinin (2013) warns researchers against only providing personal justifications, “To justify a particular narrative inquiry, a researcher needs to attend to the importance of considering the possibility of shifting, or changing, practice” (p. 36). My practical justifications for this study expanded when I changed jobs at the conclusion of data collection. At the onset of this study, I led an administrative team in charge of all aspects of the secondary ELA curriculum (i.e. curricular materials, assessments, interventions, and professional development) for large, high-minority, low-income urban school system. This study was rooted in the demands of my employment and focused on the possibility of practical change starting in the district office. District leadership was eager to embrace technology usage and supported my interests in technology integration in secondary ELA classrooms. Shortly following the completion of data collection, I left my district-level position to work in a high-minority, low-income, urban charter high school as the curriculum and instruction lead on the administrative team. I hope the narratives shared here will impact secondary instructional practices both in the
district in which data was collected and in my current school. Specifically, a report I will submit to the district detailing the stories shared in this study may help leadership facilitate increased technology integration in secondary ELA classrooms. The stories shared here may also inform my current work with high school teachers eager to use Chromebooks and other technological tools the charter’s Chief Executive Officer recently purchased for classroom use. The stories of technology integration told here shine light on barriers and instructional practices district and school leaders can influence and improve.

**Social justification.** Clandinin (2013) defines social justifications as either focused on theory or policy. My social justification for this study is theoretical, at the outset of this study, I anticipated that new disciplinary knowledge would be generated (Clandinin, 2013). As a result of this inquiry, I acquired new understandings regarding technology and pedagogy in minority, low-income, middle school ELA classrooms and hope my readers gain the same.

**Narrative Inquiry**

Predicated on the examination of stories, narrative inquiry is a relatively new research methodology gaining in popularity (Clandinin, 2006, 2013; Clandinin & Connelly, 2000; Czarniawska, 2004; Phoenix, 2008; Riessman, 1993, 2008; Squire et al., 2008). Many quantitative researchers, accustomed to the rigidity of numerical data, approach narratives with distrust and apprehension (Czarniawska, 2004; Grumet, 1991). At best, they worry narrative depends too heavily on researchers’ interpretations and, at worst, they decry the method as self-indulgent (Czarniawska, 2004; Grumet, 1991).

Despite these concerns, narrative inquiry may be viewed as advantageous over quantitative methods because, by telling stories of real people facing real challenges, narratives eliminate the cold indifference generated by statistical analyses of generic participants (Witherell
& Noddings, 1991). In addition, a dependence on stories is at the heart of all educational research regardless of methodology (Lyons, 2008; Riessman, 1993; Witherell & Noddings, 1991). Educational research seeks to construct meaning and, as our main source of meaning-making, narratives are at the root of all understanding (Clandinin & Rosiek, 2007). The importance of narrative to our lives is not new. Our lives are composed of a continuous series of related stories (Connelly & Clandinin, 1990). Throughout history, we have depended on narrative structures to make meaning of the stories that comprise our lives (Czarniawska, 2004; Georgeakopoulou, 2006; Squire, 2013; Witherell & Noddings, 1991). Thinking narratively is so important to understanding that it is one of the first discourses young children learn (Riessman, 1993).

Although narrative theory dates back to Aristotle’s *Poetics* (Colyar & Holley, 2010), modern narrative inquiry is based on Dewey’s (1938) notion that all education (both formal and informal) comes from experience. Clandinin and Connelly (2000) build on Dewey’s (1938) assertion and suggest, because experiences occur narratively, they should be studied narratively. Narrative research is both a method and phenomena under study (Pinnegar & Daynes, 2007). This study may take two distinct forms: exploring participants’ stories through their retellings or living alongside participants and exploring the experience together (Clandinin, 2013). For this inquiry, I will employ the latter method: referred to as an experienced-based narrative and characterized by a full understanding of the experience (Squire, 2008). An experienced-based method of narrative inquiry is appropriate for this study because, during casual conversations, potential participants shared with me a desire for some assistance planning for and teaching with technology in their ELA classrooms. Assisting participants as they plan and teach will situate me
as a participant in the study. Together with my participants, I will share the experience of technology integration in their ELA classrooms.

**Three-dimensional inquiry space.** Clandinin and Connelly (2000) and Clandinin (2013) situate narrative inquiries within a three-dimensional inquiry space consisting of a temporality commonplace, sociality commonplace, and place commonplace. By attending to each dimension, I will examine the experience of technology usage in high-minority, low-income classrooms.

Temporality refers to the consideration of the past, present, and future when examining an experience. This reflects Dewey’s (1934, 1938) suggestion that experiences are continuous and must be examined in relationship to what occurred before and what will occur in the future. Temporality for this inquiry means I will be conscious of the fact the experience is not in isolation, but rather connected to the experiences that surround it.

In addition to being continuous, the three-dimensional inquiry space is socially oriented. Bearing in mind the social conditions in which an experience occurs, narrative researchers must attend to personal and social conditions (Clandinin & Connelly, 2000; Clandinin, 2013). The social conditions affecting the experience, namely the institutions, cultures, families, communities, and languages of my participants and myself will be considered as I conduct this inquiry. Experiences occur in relationship to the environment and consideration of these social environmental conditions is essential for a successful narrative inquiry (Dewey, 1934, 1938).

Place, the final commonplace, refers to the physical location in which an experience occurs (Clandinin & Connelly, 2000; Clandinin, 2013). According to Dewey (1938), all experiences are composed of both a situation and an interaction between the individual and the environment. The stories generated for this study will depend on the relationship between the physical place and the experience. Urban schools in particular are unique places that influence an
experience. For example, walking through metal detectors at a school entrance shapes perceptions of the school (i.e. views on school safety and student behavior may form) and is an important consideration when examining experiences in such a setting.

**Grand narratives and small stories.** Particularly appropriate for a study examining exceptions to the norm, such as the experiences of teachers working with minority, low-income students and integrating technology into their curriculum, narrative inquiry enables the researcher to focus on stories of experience hidden from general view (Clandinin & Connelly, 2000). These little stories reveal nuances and differences typically hidden by large-scale research studies (Boje, 2001; Clandinin & Connelly, 2000). Referred to as grand narratives (Lyotard, 1979), research and popular media tell stories about the lives we lead focused on generalizations and a big-picture view (Clandinin & Connelly, 2000). While grand narratives reveal important aspects of an experience, they hide little stories that may contradict the grand narrative. Subsumed and silenced by the grand narrative, little (also called small) stories are socially-oriented (Squire et al., 2008), typically focus on ongoing events, (Georgakopoulou, 2006), and attend to story tellings, allusions to tellings, deferrals of tellings, and even refusals to tell (Georgakopoulou, 2006; Pheonix, 2008).

Discussed in chapter two, the grand narrative of technology use in high-minority, low-income schools is characterized by lack and deficit. According to the grand narrative, minority, low-income students experience limited access to technology inside and outside of school (Boser, 2013; Clark, 2000; Cuban, 2001; Department of Commerce, 1995; Purcell et al., 2013; Ritzhaupt, Liu, Dawson, & Barron, 2013). Hidden within the grand narrative are little stories that often contradict the larger story. In the case of technology usage by minority, low-income students, Rueker (2012) is an example of a little story that contradicts the grand narrative by
telling how Hispanic students experience various levels of technology usage at school and home rather than a near-complete lack as suggested by the grand narrative. Powell (2007) insists more little stories like are needed examining the digital divide and suggests researchers study what occurs when minority, low-income students have access to technological tools. My desire to examine little stories that may be hidden within the grand narrative prompted my selection of narrative inquiry for this study (Clandinin & Connelly, 2000; Clandinin, 2013).

**Poetry as Research Method**

Throughout this inquiry, I wrote poetry as a way to analyze data and represent findings. Like narrative inquiry, arts-based research such as poetry, is a fairly new brand of research methodology often met with skepticism regarding its seriousness and rigor (Cahmann-Taylor, 2008). I believe, along with others scholars (i.e. Faulkner, 2009; Grisoni, 2008; Leggo, 2008; van Manen, 2002; Richards, 2013) that poetry can provide researchers with a way of representing data that evokes emotion, reflection, and action. Poetry is a “special language” researchers can employ when other modes of representation fail to capture what they want to communicate to others (Faulkner, 2009, p. 17). It enables researchers to create something universal based on personal experience (Faulkner, 2009). Poetry is particularly useful when a researcher wants to unveil a moment of truth experienced in a study (Faulkner, 2009).

**Poetry and Narrative Inquiry**

“…poetry is bigger than the poem.” (Behar, 2008, p. 62)

Situated in the three-dimensional inquiry space, narrative inquiries are complex stories co-constructed by participants and the researcher (Clandinin, 2013; Clandinin & Connelly, 2000). Especially well-suited for narrative inquires, poetry preserves the messiness of research, blurring where the voice of the researcher and researched begin and end (Bhattacharya, 2008).
Another strength of poetry is its resistance to undemanding interpretations; rather, it forces the reader to interact with the text and the story the text represents (Faulkner, 2009). Poetry’s use of metaphors is also beneficial, calling attention to relationships and structures that might otherwise go unnoticed (Eisner, 2008).

Poetry, like other art forms, is itself an experience and “does not merely represent other things” (Dewey, 1934). Griffin (1995) states, “It [poetry] is the thing. It is an experience, not the secondhand record of an experience, but the experience itself” (p. 191). Writing poetry to share research discoveries is a way of inviting the reader to interact with the research text. By employing poetry, the researcher creates an experience (the poem) through which the reader learns of and engages with the inquiry. Salmon as cited in Riessman and Speedy (2008) reminds us all narratives are co-constructed with an audience. He states the reader should be considered when researchers construct data representations. By weaving poetry into data collection, analysis, and the representation of findings, I invite the reader to participate in the inquiry. I hope the poems I wrote and wove throughout this inquiry are as Behar (2008) suggests, “bigger than a poem” (p. 62).

The SAMR Model within Narrative Inquiry

At the onset of this study, I intended to follow Clandinin’s (2013) method of narrative analysis; however, as the study took shape, I found I needed a means of organization for the various ways I witnessed technology use in classrooms. Without such an organizational structure, the stories and poems generated from the data stared disjointedly at me from the page. Discussed briefly in chapter one, the SAMR Model (Puentedura, 2013) proved my solution. The model provided me with a way of viewing and organizing my data. When seeking threads across
stories (Clandinin, 2013), the four levels of the SAMR Model functioned as a method for organizing my emerging understanding.

Puentedura (2013) suggests technology can “augment human intellect and learning capacity” (n.p.). He suggests teaching and learning is best served by technology through redefinition. The SAMR Model presents a series of four categories or levels delineating the nature of technology use in the classroom and is illustrated in Figure 4 below. Each level is characterized by the amount of instructional transformation technology incurs. The first and most basic category is substitution. The second category, augmentation, builds upon substitution by adding a functional improvement to a technology-free way of doing something. Modification, the third category, is achieved when technology results in a redesign of the task. The final and most desirable category of SAMR, redefinition, requires a total transformation of a task through technology. The four levels, substitution, augmentation, modification, and redefinition, are further described in the graphic below.

**Figure 4.** The four levels of the SAMR Model in order from least to most transformative.
The SAMR Model is relatively new. The earliest citation I located indicates presentations and podcasts in 2008 as the genesis of the model (Romell, et al., 2014). Developed by Ruben Puentedura, the model classifies technology integration and focuses on the goal of pedagogical transformation. Most mentions of SAMR are found either in practitioner websites devoted to integrating technology into the elementary and secondary classroom (i.e. Brown, 2015; Common Sense Media, n.d.; Educational Technology and Mobile Learning, n.d.) or recent dissertations (Curran, 2015; Rowe, 2014). Because it is a new way of thinking about technology use in education, it lacks a strong research base. During my research on SAMR and other technology integration models, I found an article that lambasted the SAMR Model and similar models on the basis that there is a lack of research supporting such classifications (Santos Green, 2014). I hesitated and debated the utility of SAMR, but ultimately decided to employ it because I felt it well suited for the purposes for this study.

Employed together, narrative inquiry, poetry, and the SAMR model, provided a way to examine and describe the narratives of technology use in participants’ classrooms. Narrative preserved story and experience. Poetry invited the reader to participate in the inquiry. The SAMR Model organized stories based on levels of instructional transformation, the ultimate goal of technology integration in secondary classrooms.

**Research Design**

As discussed in chapter one, this is an experience-based narrative. These types of narratives involve only two or three participants, require engagement by the researcher in the experience, and include a series of interviews aimed at gaining a deep co-constructed understanding of the experience (Clandinin, 2013; Squire, 2013). Because this study is an experienced-based narrative inquiry, I functioned as both study participant and researcher. I
negotiated this dual role with teacher participants at the outset of the study (Clandinin, 2013). In this negotiated role, I was a participant in classroom activities (Patton, 2002). Together, participants and I created one story among many potential stories and many versions of the same story to share our discoveries about technology integration in high-minority, low-income secondary classrooms (Leggo, 2008).

This section of the chapter describes the process through which I planned this study. The section begins by describing the recruitment of participants. I then share the district and school contexts and explain how the participants and I selected class periods for this study. I share the role I negotiated with participants while experiencing their classes. The challenges I faced recruiting student participants are described, as are the types of data I collected. Figure 5 shows the process I followed when planning this inquiry. Each part of the process is explained further in the subsections below.

Figure 5. Chronology of research planning and design.
Teacher participants. Like all narrative inquiries, I produced this study in collaboration with participants (Clandinin, 2013; Clandinin & Connelly, 2000). I sought two teachers willing to engage in the inquiry process with me. Such a small sample size is appropriate because this study does not make generalizations or represent a population. Rather, I focused on the stories of just two classes, one taught by each teacher participant in order to provide an in-depth examination of the experiences particular to my participants (Squire, 2013). I developed the following criteria for participant selection:

1. Participants taught middle level ELA in the district in which I worked, a high-minority, low-income district. Middle level students in the district attended one of two types of schools. Some schools enrolled students in kindergarten through eighth grade and others followed a traditional middle school model, enrolling students in grades six through eight. I sought teachers working with middle level students, those in grades six, seven, or eight, at either type of school campus.

2. Participants integrated technology regularly into the ELA curriculum. I define regularly as two or three times a week. Although I have not found research classifying or defining amounts of technology use in secondary classrooms, my experiences as a teacher and central office employee in two different school districts inform my definition. In these schools and districts, many teachers share technological tools with colleagues. Laptops and sets of iPads are examples of technological tools frequently shared among pairs or groups of teachers within a school. This sharing of resources makes daily access impossible, but use two to three times a week realistic. Prior to the start of the
study, participants self-reported that they used technology two to three times a week.

3. Participants planned curricular activities focused on digital literacy and 21st century skills. I sought teachers who used technological tools in meaningful ways, not for rote drill and practice. Participants identified themselves as educators who used technology in ways that promoted digital literacy and 21st century skills.

4. Participants displayed a willingness to share experiences in their classrooms with me. I sought teachers comfortable including me in their classroom space, sharing their students, and their thoughts.

Finding suitable participants proved difficult. Two barriers stood in the way of recruiting participants meeting my criteria. First, at the time of this study, I was working in the district’s central office. A rigid top-down structure and high-stakes teacher evaluation system run out of the central office made many teachers leery of working closely with me. Second, as previously stated, research indicates the majority of teachers in low-income schools use technology infrequently and when it is used, the tasks in which students engage are not intellectually demanding (Boser, 2013; Purcell et al., 2013). Many visits to schools around the district proved the research true time and time again. In the best-case scenarios, teachers assigned online “research” culminating in a copy and paste exercise from Wikipedia. Often, I saw technology used as a babysitter in ELA classes. Students done with assignments before the end of the class period played free computer games or read online, code for ‘watch videos on YouTube.’

Each time I visited a school, I mentally compared each ELA teacher I observed with my criteria. I was disappointed repeatedly. After seven months working in the district, panic started
setting in. I worried finding suitable participants might prove impossible. My first participant and I connected during a three-week curriculum development institute I led for the district during the summer of 2014, alleviating my fears. Over the course of the summer, a teacher and I connected over our mutual excitement for technology in middle level classrooms. The teacher, who I call Martin throughout this study to keep his identity confidential, taught sixth grade in the district and my team selected him for the institute based on a strong application that highlighted his critical eye for curricular tasks. During the institute, he created curriculum for the district’s sixth grade classes, much of which included optional technological components. While working at the institute, Martin shared with me how he incorporated technology into his classroom and shared a paper he wrote during his graduate studies on technology in secondary classrooms. By the end of the institute, Martin offered to participate in my dissertation study.

Once Martin was on board, I shared with him my struggle to find participants. Immediately, he suggested a second participant, who I refer to using the pseudonym Samantha. A friend and colleague, Samantha taught eighth grade at the same school as Martin assured me she regularly incorporated technology into her ELA instruction. Both in their second year teaching at Hurston Middle School (a pseudonym), Samantha and Martin previously taught together at another school in the same district. Each started their teaching career in a different state before moving to the area in which Hurston Middle School is located. Martin arranged a meeting between Samantha and me during which Samantha indicated she was willing to participate in my study. Taking her final courses in a doctoral program, Samantha was interested in qualitative research and believed participating in a study would further her understanding of the dissertation process.
The process by which I identified Martin and Samantha as participants is called snowball sampling (Gall, Gall, & Borg, 2007). This type of sampling occurs when one selected participant recommends another person as a suitable case for the study (Gall, et al., 2007). In this study, my first participant, Martin, led me to my second, Samantha.

Martin and Samantha opened up their classrooms to me throughout this study and conversed with me after data collection answering additional questions and conducting member checks. I am not sure if I would have been brave enough to open up my classroom and instructional practices to a stranger’s scrutiny when I was teaching. I am forever thankful that they were willing to do so and joined me on my dissertation journey.

**Martin.** A teacher for 11 years, Martin started his career as a corps member with Teach for America immediately after his undergraduate education. His first year of teaching was spent as a life sciences instructor. He claims “that was not a good fit,” and spent the rest of his teaching career as an ELA teacher. At various points in time, he’s taught everything from sixth to twelfth grade, but prefers sixth grade students- the grade level he was teaching at the time of this study. He holds a master’s degree in Educational Leadership. He was firm, yet warm with his students and displayed a wicked sense of humor.

Stated previously, Martin and I discussed technology’s role in ELA classes well before the start of the study. When I asked about his perception of the importance of technology in his ELA classroom, Martin affirmed he believed teaching with technology was important. In his perfect classroom, all students have a laptop and use their cell phones as a part of instruction. He also shared his belief that digital literacy should be taught alongside traditional literacy in the ELA classroom.
Martin shared that early in his career, he became a Google Certified Teacher. In one of the courses he took for certification, he recalled having more technological experience than his colleagues, “They were trying to show people what Google Maps was and I was like what? I mapped part of our neighborhood.” He considered becoming a Google teacher trainer, but found the cost of the program prohibitive. Instead, he focused his energies on acquiring and incorporating technology into his classroom. While working at a school prior to Hurston, he applied for and received grants for the purchase of a class set of iPods and a docking cart. At the time administration supported his efforts, but the school’s web filter blocked access to the type of information packets sent via Apple to the iPods. This prevented Martin from downloading apps onto the iPods for student use and was a problem he discovered after purchasing the iPods.

Martin persisted with integrating technology into his classroom despite challenges with the iPods. He set up a Twitter feed for his class on which he posted information such as homework assignments. Through the feed, he would respond to student questions until nine o’clock at night. He also used the feed to facilitate conversations among his students. During President Obama’s first State of the Union Speech, he estimated 30 to 40 of his 110 students participated in a Twitter conversation using a hashtag, #Mr.Xclass.

Over the years, he’d created a wiki page for the class that functioned as a class website. One year, he utilized BlogSpot for posting instructional slideshows students viewed independently in class and could be accessed at home. Before teaching at Hurston, Martin reported nearly all his students could access a computer at home. At Hurston, he gave out a parent survey at the beginning of the year on which he inquired about technology access. Results indicated most students had some technology access at home. For some students, access was achieved on a mobile device such as an iPad or smart phone.
At the conclusion of this study, Martin resigned from his teaching job and, at the time of this study’s publication, was looking for a job in an education-related field. He shared with me that he felt it was time for a career change and was in a personal situation that enabled him to take some time off.

**Samantha.** At the time of the study, Samantha was a doctoral student in Educational Leadership through an online university program. She had taught for 12 years and, like Martin, was not an education undergraduate major. In order to earn her teaching credentials, she took college courses during her first years in the classroom. Prior to working at Hurston Middle School, she taught in a neighboring school district. All of her teaching experiences are at the middle level. At the time of this study, Samantha was teaching eighth grade ELA. Both Martin and Samantha described the school’s eighth grade students as particularly challenging, but Samantha’s students responded positively to her firm and demanding demeanor. Students popping into the room saying hello, asking a question, or seeking help on assignments interrupted nearly every conversation between us during the study. Following one such interruption, Samantha smiled and said, “As much as they give me drama, they come in every two seconds to say hello.”

Regarding technology integration into her curriculum, Samantha, like Martin, believed its inclusion was important. She felt her classroom should reflect the digital environment in which her students lived outside of school and she strove to integrate technology frequently in instruction. She liked experimenting with technological tools and was continually seeking new tools and resources.

In years past, Samantha reported using technology often in instruction. Even before the MacBook cart arrived in her classroom, Samantha used technology every day through the use of
the Smart Board. She estimated students had technology in their hands three to four times a week. They used laptops from a computer cart she shared with other teachers and desktop computers in one of the school’s two computer labs. In the year before this study, Samantha used clickers frequently in instruction. Run through a teacher-controlled program, students responded to questions by “clicking” on the answer using a small remote referred to as a “clicker.” Through a software program, Samantha could see students’ responses in real time. At the time of this study, a class set of clickers sat on a shelf in the back of her classroom collecting dust. With the increase in number of laptop computers for student use, Samantha found the clickers obsolete.

Like Martin, Samantha sent home a survey at the beginning of the school year and ascertained that most of her students enjoyed access to the internet at home. Access, although common, was not universal. This made completing homework assignments difficult for some students since each week Samantha assigned a specific number of lessons on iReady, an adaptive online reading program owned by Curriculum Associates, for homework. iReady is a K-12 adaptive diagnostic and instructional program that claims to address students’ needs at the sub-skill level as well as accurately predict standardized test performance. The program is one of many the district recommends as an intervention option for schools. School sites individually contract with Curriculum Associates for the program and teacher training. Aware that some students lacked internet access at home, Samantha opened up her classroom at lunchtime for students. Many afternoons, I watched students troop into her classroom with their lunch trays, pull a laptop out of the cart, and commence working on an iReady assignment.

When talking about her goals for technology in the classroom, Samantha told me she wanted students to exercise their creativity through technological means as well as experience participation in an online community. She said, “I really want them to get into the whole idea of
really being like a part of the web and putting out their expressions.” Towards this end, she planned a blogging activity for the last month of the school year. Through blog posts, students would conduct a small-scale social media campaign about an issue of personal interest. Although Samantha was excited about this activity, and shared it with me during our first conversation, the assignment did not take shape as planned. Students did not blog or participate in an online community. A full description of this assignment is shared in the next chapter.

Towards the end of data collection, Samantha told me she would not teach ELA the following school year. Samantha stayed at Hurston Middle School for the 2015-2016 school year, but instead of teaching ELA, she served as the drama teacher. Throughout this study she managed Hurston’s afterschool drama program and told me she was excited for the teaching shift that would allow her to focus on the school’s expanding drama program.

**School site.** By the time I recruited participants, I had already received IRB approval through the university and permission from the school district to conduct research in a secondary school pending principal’s approval. I was acquainted with the principal of Hurston Middle School through my work at the district office and she was supportive of my study. She gave her consent for me to conduct research at the school.

Over 47,000 students are enrolled in school district containing Hurston Middle School. About 7,000 are enrolled at the middle level in grades six, seven, and eight. About 67% of students identify as black and 76% of students qualify for free or reduced price lunch, a commonly used indicator of poverty. School enrollment totals vary widely, ranging from under 200 at the smallest elementary school to over 1,700 at the largest high school. Enrollment in middle schools in the district also varies with most schools servicing between 300 and 600 students.
About 370 students in grades six through eight are enrolled in Hurston Middle School. Over 85% of the school population identifies as black. Middle schools in the district are divided between schools with high Hispanic populations (over 70% of students) and high black populations (over 95% of students). Because of its location in the city, Hurston enrolls more black students than Hispanic. Middle schools are also divided between those that enroll about 50% of students who receive free or reduced price lunch and schools that enroll over 95% of students who receive free or reduced price lunch. Over 60% of students at Hurston qualify for free or reduced price lunch. In the school year 2012-2013, over 60% of students scored proficient on the reading and math sections of the state’s standardized test, beating city averages in both contents by over 10%. Its scores make it a desirable public school in the area and, as a result, student enrollment is stable throughout the year.

Each morning, students enter the building in single file and are greeted by unsmiling, uniformed security guards. Students place their backpacks, books, and purses on an X-ray machine’s conveyor belt and walk through a metal detector. Each time the machine squawks, a security guard stops the slow student line and waves a metal-detector wand up and down the offending student’s body, searching for contraband metal. Once done with this routine, most students make their way to the cafeteria for breakfast. Some head to their lockers and then slowly meander towards their first period classes. Security guards roam the hallways throughout the day. I observed them during passing periods hustling students into classes and out of the several stairwells students race up and down among the three floors.

Students attend seven classes daily, each 50 minutes long and many participated in after-school activities. Nearly all students walk or take public transportation to school. The district only uses school busses for the transportation of special needs students.
Compared to other schools in the district and the school at which I taught, Hurston Middle School’s students and teachers enjoyed regular access to several technological tools. During a recent renovation, each classroom was equipped with a Smart Board, a display that enables teachers to project information on their laptops onto a large interactive screen. A technology grant resulted in the purchase of several laptop carts containing 30 MacBooks each at the end of fall 2014. Both Martin and Samantha had a laptop cart at their disposal daily unless the school needed it for standardized testing. For Samantha, accessing the cart again after testing was a little tricky. The school was undergoing renovations and the elevator was not always in working order. If the laptop cart was removed from her classroom, getting it back up to her third floor room depended on the working condition of the elevator. In some cases, it took a few days for the cart to make it back up to her classroom. Teaching in a first-floor classroom, elevator access wasn’t an issue for Martin.

The school supplied teachers with an iPad and MacBook Air for instructional use. These devices connected to the internet through the school’s wireless connections. The internet was filtered through school and district firewalls and, for students, most social media websites were blocked as well as YouTube and other video streaming sites. Teachers accessed most of the blocked websites with their login credentials, enabling the use of streaming video for instruction. Teachers enjoyed reliable internet connections in the building. I did not observe any connection issues during my visits to the classrooms for this study. The school also contained two computer labs equipped with a class set of desktop computers. The labs were utilized for computerized standardized testing, but teachers could reserve the labs for instruction outside of testing windows.
During this study, state-mandated standardized testing had an impact on observations and instruction. Observations occurred sporadically during state-mandated testing rather than on the normal twice-weekly schedule. Classroom observations were cancelled because teacher participants were testing students or their own students were testing. Teachers in the district were not allowed to administer the test to their own students. At Hurston, teachers administered the test to students in a different grade level. I was required to monitor testing at another school site and could not leave to observe classes at Hurston, resulting in some observation cancellations.

State-mandated standardized testing along with school and district testing impacted the accessibility of technology for instruction. The school required all students take the Scholastic Reading Inventory (SRI) test three times a year. An online reading comprehension assessment, the SRI test determined the Lexile level, a quantitative measure of reading ability, at which each student independently read. Lexile score growth was tracked and used by the school as a part of teachers’ yearly performance evaluations. At Hurston, all teachers were evaluated based on Lexile scores, even those teaching math. The district required students take performance-based assessments (also referred to in the district as unit tests) four times a year for all secondary ELA classes. Through an online platform, students accessed the reading comprehension portions of these assessments. The state also required computer-based testing. All middle school students took a comprehensive reading and math assessment through an online platform.

Students needed computers for all of these tests, but the state-mandated testing pulled all available computers from classrooms for a sustained period of time. Although the test took most students in the school three and a half days to complete, laptop carts were removed from all classrooms for three weeks. Activities during the three-week timeframe included prepping computers for the test, additional testing time for some special education students, make-up
testing for absent students, and resetting the computers for classroom use after testing administration was complete. Preparations for the test included reimaging all laptops for security purposes. After testing, the technology coordinators reconfigured all usage settings for the computers for general classroom use.

**Roles.** Participants and I negotiated our roles at the outset of the study (Clandinin, 2013) and I enacted different roles in the two classrooms. Martin expressed a desire for occasional instructional support in his classroom. In his class, I spent most of my time observing but occasionally took on a more active role. For example, in the middle of the semester, I facilitated small student groups engaged in WebQuests, small research tasks in which students located and analyzed information from a curated set of websites. Samantha was comfortable with my participation in class, but did not structure class assignments with me in mind. In Samantha’s class, I was mainly an observer. My participation consisted of answering students’ questions or working with a student or group of students who needed adult support. I did not plan such interactions in advance, but they occurred frequently. I engaged directly with students during every class period I observed. Both teachers expressed an interest in discussing future lesson plans that incorporated technology with me and this occurred during our conversations throughout the study.

**Research schedule.** During the only time the three of us met together, Martin, Samantha, and I worked out a research schedule. Because my job did not allow all-day observations, we decided I would focus on one class from each teacher during the study. It was determined I would observe Martin’s first period class and Samantha’s second period class. Table 1 below provides student demographic information for these classes.
When selecting classes, I asked Martin and Samantha to identify classes representative of the courses and students they taught. They selected Martin’s first period and Samantha’s second period because they believed the academic and technological abilities of students in these classes representative of the larger number of students they taught throughout the day. Martin and Samantha felt these classes contained confident students who would not mind my presence and participation in class activities. The size of the classes and demographics of the students in these class periods were consistent with the other classes Martin and Samantha taught and classes at the school in general. This arrangement also proved convenient for me as it allowed me to start my day at Hurston Middle School, observing classes back-to-back. This made my visits to classrooms relatively easy to integrate into my work schedule.

Table 1

*Student Information by Teacher and Class Period*

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Grade Level</th>
<th>Enrollment</th>
<th>Gender</th>
<th>Racial Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Martin</td>
<td>6</td>
<td>24</td>
<td>14 males</td>
<td>23 students identified as black</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10 females</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 student identified as Vietnamese</td>
</tr>
<tr>
<td>Samantha</td>
<td>8</td>
<td>23</td>
<td>12 males</td>
<td>23 students identified as black</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11 females</td>
</tr>
</tbody>
</table>

We settled on twice-weekly visits to each classroom. Typically, I observed each classroom for the duration of a class period (50 minutes) on Tuesdays and Thursdays. Various school events, holidays, and district meetings disrupted this schedule and resulted in some observations occurring on other days of the week or not at all. All classroom observations occurred from February 2015 through June 2015.
This five-month timeframe was selected for four reasons. First, the school notified teacher participants in summer 2014 they would gain access to laptop carts in late fall, enabling increased technology usage during spring 2016. Second, this time period included the standardized testing window for schools in the district. The inclusion of the standardized testing window in this study enabled me to see firsthand how electronic testing may affect instruction with technological tools. Third, I saw several activities and routines repeated and experienced data saturation by the end of June 2015. Finally, my department was not fully staffed until spring 2015, making an earlier start difficult with the demands of my work schedule.

**Student participants.** A total of ten participants engaged in this study: two teachers, seven students, and me. Martin, Samantha, and I determined I would conduct the first focus group interview with students in mid-March and hold a follow-up interview with the same students in late April after the state mandated testing. These times were identified because they accommodated district and state-mandated testing. Selection of these time periods also allowed student completion of assignments in class Martin and Samantha felt important for test preparation.

At the beginning of this study, I was excited the district approved the inclusion of students as participants. I invited all students in both classes studied to participate. I introduced myself to each class, briefly described the study, and handed out research permission forms. My excitement dissipated when students did not return research permission forms allowing their participation in the study. At the study’s conclusion, seven students participated, all from Samantha’s second period class. Table 2 provides a summary of student participants’ pseudonyms and the month of the focus group interview(s) in which they participated.
At the beginning of data collection, only two of Samantha’s students had returned permission forms and none of Martin’s students had done so. The teachers told me not to worry. Samantha felt confident more students would turn their forms in if she reminded them about the study. She asked for extra forms in case students told her they lost the first one. I gave her a thick stack. At the time of the first scheduled focus group interview, no additional students had turned in signed forms. I interviewed the two students with signed forms. During my next visit, other students expressed interest in talking to me like their peers. By the next week, five more students turned in forms.

Table 2

*Student Participants’ Pseudonyms and Focus Group Participation*

<table>
<thead>
<tr>
<th>Student Pseudonyms</th>
<th>Month of Focus Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travis</td>
<td>March</td>
</tr>
<tr>
<td>Ariel</td>
<td>March and April</td>
</tr>
<tr>
<td>Gina</td>
<td>April</td>
</tr>
<tr>
<td>Tatyana</td>
<td>April</td>
</tr>
<tr>
<td>Asia</td>
<td>April</td>
</tr>
<tr>
<td>Iris</td>
<td>April</td>
</tr>
<tr>
<td>Candice</td>
<td>April</td>
</tr>
</tbody>
</table>

Due to testing and the complexity of my schedule, I did not interview the additional five students until the second scheduled student focus group interview in April. As I was preparing for the second interview, one of the students from the first interview expressed interest in participating again. She claimed she had more to tell me about technology in her classes. I allowed her to participate. In total, I spoke with seven students from Samantha’s eight-grade
second period ELA class. Six of the students were female and one was male. All identified as black.

I audio-recorded and transcribed all interview data. Each focus group interview lasted about 35 minutes and yielded 10 single-spaced pages of text, totaling 20 single-spaced pages of text. I met with all students at the conclusion of the study for a member check. Students found I had attributed three sentences to the wrong student during the second focus group interview. This was the only correction made as a result of the member check.

Students in Martin’s sixth-grade first period ELA class received study permission forms from me on three different occasions, once before the start of the study and twice during the study. As the date we had selected for the first student focus group approached, Martin and I discussed the fact no students had turned in forms. He expressed confidence that students would eventually return signed forms and offered to talk to parents about the study during upcoming parent-teacher meeting days. Following these meetings, Martin shared with me that parents expressed discomfort with the study. They were wary of both an unfamiliar researcher and university. This reaction from parents came as a surprise to Martin and me. We had felt confident that once the teacher explained his participation in and support of the study as well as my role within the district, parents would agree to allow their students to participate. By the conclusion of the study, no students from Martin’s class returned permission forms and I did not conduct any focus groups with his students.

Hearing student voices from only one classroom was not my original plan; but I chose to gain what I could from the access I was allowed. Student focus group interviews are used here as a secondary data source to support observational and teacher interview data. Student focus group protocols are found in Appendix A.
Field texts. Clandinin (2013) calls the data collected during narrative inquiries, field texts. In this inquiry, field texts consisted of 42 classroom observations (total of 35 hours), nine audio recorded conversations (semi-structured and unstructured interviews) with teacher participants (total of 85 pages of single-spaced text), two audio-recorded conversations (semi-structured interviews) with student participants (total of 20 pages of single-spaced text), a researcher journal including poetry, and documents such as teacher-created assignments. (See Table 3 below for an overview of field texts.) I utilized technology throughout data collection by utilizing Evernote, a note-taking app that syncs across devices (laptop, iPad, phone, etc.). I saved all data in the app during the study. I used tagging and annotating capabilities in the app throughout data collection and analysis.

Classroom observations. Classroom observations focused on classroom activities involving technology. Paying particular attention to the three-dimensional inquiry space delineated by Clandinin (2013) and Clandinin and Connelly (2000) consisting of temporality, sociality, and place, I recorded my experiences in the classroom with teachers and students. Drawing on my understanding of technology use in minority, low-income schools, I kept track of what was not observed when a specific lack was noteworthy (Patton, 2002). For example, I noted when explicit instruction on a technological tool was not provided and might have supported student learning.

As mentioned above, I utilized Evernote when collecting data. I particularly like Evernote’s photo compatibility. As part of my job observing classroom instruction, I take photos of teachers, students, and assignments to supplement my written notes. I find photos help me remember and re-experience my time in the classroom. This strengthens my feedback to teachers and school leaders. I used photography in the same way for this study. On some days, I wrote
very little, instead, my observation notes for the day in Evernote are full of photos. Unlike other notetaking apps, Evernote allowed me to annotate images (see Appendix F for an example from my data). I could include photos in the same online space as text. In practice, this meant I made text notes about a class activity like an online quiz and embed photos of the activity, in this case images of student laptops on the quiz site, into the same space as the text. Appendix D provides one such instance of this from my data. Other images recorded documents used during class. While I collected a few hard copies of class materials, I took photos of most items. These images included assignment directions, student response sheets, and project checklists. In total, I took 142 photos during classroom observations. These images supported approximately 120 pages of single-spaced typed notes taken during observations.

Conversations. Because narrative inquiries are collaborations with participants, Clandinin (2013) espouses the use of conversations rather than formal interviews as a data source. I engaged in conversations with Martin and Samantha throughout the data collection process. Initial and final conversations were semi-structured (see Appendix B for teacher participant interview protocols). Having questions planned in advance for conversations helped me ground the study in common information from each teacher participant and ensured I addressed all loose ends at the conclusion of the study. Other conversations with teacher participants were unstructured and occurred about once a month. In total, nine conversations occurred, four with Samantha and five with Martin. One more interview occurred with Martin than Samantha because he expressed interest in meeting with me after the school year’s conclusion for a final reflection on the year and discussion of potential next steps in his career. I audio recorded and transcribed all conversations. Transcribed conversations resulted in 85 single-spaced pages of text. Martin and Samantha conducted a member check on the transcribed
conversations and indicated no changes needed. Selections from the transcripts of our conversations are found in Appendixes C and D.

As explained above, the teacher participants and I scheduled student focus group interviews at the start of the study. They took place in April and May. Seven students from Samantha’s eighth-grade class participated. Student focus group conversations were semi-structured (see Appendix A for student focus group interview protocols), audio-recorded, and transcribed by the researcher. The transcribed interviews totaled 20 single-spaced typed pages. Students engaged in a member check described in the section above. Selections from the student focus group transcripts are located in Appendix E. Findings from student focus groups triangulated findings from observations and teacher interviews.

*Researcher journal.* As I conducted this inquiry, I regarded narrative as both a form of knowledge and a way to communicate (Czarniawska, 2009). In prose and poetry, I recorded my thoughts and feelings regarding the experiences of which I was an observer and/or a part of in the teacher participants’ classrooms. The journal served as a much-needed outlet for my gut reactions to the teaching and learning I observed. As a district leader, I sometimes found putting aside my professional role and stepping into the mind-space of researcher difficult. As an administrator, I visited classrooms with a critical eye towards instruction aligned with the Common Core State Standards and district-created curriculum. My stance was largely evaluative and my visits ended in debriefs with school leaders focused on potential areas of improvement. When I visited teacher participants’ classrooms, my purpose was very different. I was not entering the space to focus on standards, curriculum, or areas for improvement. Instead, my observations centered on technology, instructional decisions, and how students engaged with a technology-infused curriculum. The journal, consisting mostly of poetry, helped me sift through
my reactions and identify them as either those of a district administrator or a researcher. Often
the former clouded the latter and journaling helped me separate the two as much as possible.
Selected excerpts from my researcher journal are found in Appendix G.

**Interim texts.** At the onset of this study, I intended to both keep a researcher’s journal
and create interim texts (Clandinin, 2013). Interim texts are texts created with the intention of
beginning the analysis process (Clandinin, 2013). These texts are drafted, revisited, and revised
as the study progresses. They ultimately become a source of knowing for the researcher.

Standing at my kitchen counter one brisk fall evening, I prepared two fat steaks for
dinner. As a process, dealing with raw meat struck me as similar to handling raw data. While the
meat sizzled in the pan, I jotted down the following:

I cut away the gristle

marvel at the leanness of my understanding

Poke at the other viewpoint

Blood puddles on the counter top

(examining raw data is messy business)

Creating a rough poem like the one above as I puzzle through thoughts on a particular
topic is typical behavior for me. Metaphors, like the preparation of steaks likened to the process
of data analysis, is a productive way to explore my understandings.

As this study progressed, I wrote more poetry than prose in my researcher’s journal and
found myself returning to many of the poems during the course of data collection and analysis. I
added stanzas and made revisions. Clandinin (2012) suggests revisiting interim texts throughout
a narrative study as a means of continuous data analysis. The process of writing and rewriting
interim texts stories and re-stories the experience (Clandinin, 2013; Connelly & Clandinin, 1990). Several of the poems are included in chapter four. My researcher’s journal became the source for my interim research texts. I debated stopping this practice, making myself write only prose in my journal, but attempts to rein myself in ended with stilted prose and frustration. I decided to go with what felt natural and embraced using the researcher’s journal in this unconventional way. Pairing narrative inquiry with poetry allowed me to use metaphor and story as representations of my experiences. In this inquiry, narrative structured both the process and the product (Colyar & Holley, 2008).

Total field texts collected. In this study, I produced a total of 225 pages of text and actively engaged with participants and experienced their classrooms for a total of 43.5 hours. These totals do not include the poems created in my researcher journal. I do not provide a total for the number of poems produced because I left many poems incomplete. At times, an incomplete poem was sufficient to help me thinking through and reflect on my experiences and conversations. Additionally, the poems vary greatly in length from three to 69 lines. Due to the nature of poetry, unusual spacing and line breaks abound making the poems difficult to compare with the single-spaced pages of text I produced as a result of observations and conversations. Table 3 below provides a breakdown of field text types, durations, and quantities of texts produced excluding the poetry generated during this inquiry.
Table 3

*Field Texts*

<table>
<thead>
<tr>
<th>Field Text Type</th>
<th>Duration</th>
<th>Quantity Produced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom observations</td>
<td>35 hours</td>
<td>120 pages of text</td>
</tr>
<tr>
<td></td>
<td></td>
<td>142 photographs</td>
</tr>
<tr>
<td>Conversations (teachers)</td>
<td>7 hours</td>
<td>85 pages of text</td>
</tr>
<tr>
<td>Conversations (students)</td>
<td>1.5 hours</td>
<td>20 pages of text</td>
</tr>
</tbody>
</table>

**Data analysis.** Interim texts I created in my researcher’s journal started my data analysis. Mentioned above, I revisited and revised these texts as the study progressed. I created additional interim texts throughout the data analysis process.

Determining how to analyze my data was the most challenging part of this study. The neat phases mentioned in other dissertations and research manuals felt artificial and too perfect. In these documents, phase one slipped seamlessly into phase two, and then phase two pranced perfectly into phase three. This did not fit my process. I work messy. My data woke me up in the middle of the night. I would grope the nightstand searching for my phone, click open the Evernote app and jot down a thought, a poem, or a question before falling back asleep. My data analysis jumped from one teacher participant to another. I would read observation notes from Martin’s classroom and something would remind me of a morning in Samantha’s class. I would look up the connection in observation notes taken in her classroom and record the similarity. I kept a running listing of emerging threads and accompanying wonderings. I revised it constantly throughout the process. An early entry in this listing reads, “Barrier-physical access to tech; see if there are more instances of this.”
The resistance of my data analysis to neat steps initially worried me. Was I doing something wrong? Then, I read the following when revisiting texts on narrative inquiry:

It would be tempting to view this overall process of analysis and interpretation in the move from field texts to research texts as a series of steps. However, this is not how narrative inquiries are lived out. Negotiation occurs from beginning to end. (Clandinin & Connelly, 2000, p. 132)

Relieved, I decided I should focus less on doing it right and more on doing it well. I dove back into my mess, recharged and excited about this stage of the study.

Although my data analysis did not fit into neat phases, I focused my energies in loose stages. These stages informed the examination of data (Figure 6). In total, four stages of data analysis occurred, although not necessarily in order. Throughout all stages, I wrote and revised interim texts.

![Figure 6. Stages of data analysis in the inquiry.](image)
In the first stage, I collected data and created preliminary interim texts. During the second stage, I read all of the data collected from Martin’s interviews and classroom observations. Then, I read all of the data collected from Samantha’s interviews and classroom observations. For each teacher participant, I created a chronology of technology use in the classroom. Participants conducted member checks on these chronologies to ensure accuracy. I then revised and/or created interim texts representing individual stories. In the third stage, I reread all the data and interim texts and organized discrete narratives of technology using the SAMR Model categories. The SAMR Model helped make meaning of the stories of technology use. In the final stage, Connelly and Clandinin (1990) suggest narrative inquirers “bring written documents back to participants for final discussions” (p. 12). I followed this directive by sharing the discrete narratives about experiences in each participant’s classroom with them during the writing of this final document. Martin provided some clarifying comments regarding WebQuest use and we discussed his motivation behind specific instructional decisions. In the middle of completing her own dissertation, Samantha provided a quick confirmation on the accuracy of the narratives. I considered the data again and identified what Clandinin (2013) calls “threads,” meanings and understandings that echo across stories. My goal is not generalization but the discovery of commonalities in experience (Clandinin, 2013).

Verisimilitude, Transparency, and Trustworthiness

Verisimilitude (Bruner, 1991), transparency (Cresswell, 2009), and trustworthiness (Hatch, 2002) serve as barometers measuring the quality of narrative inquiries. I readily admit the poems and prose I generated as part of data analysis as well as the discoveries from this inquiry are situated within my “culture, language, gender, beliefs, and life history” (Witherell & Noddings, 1991, p. 3). The representations I created are unique to me and inherently incomplete,
filtered through my understandings (Andrews, 2008). Producing an omniscient representation may be preferable, but is impossible. Analysis is always an interpretation (Andrews, 2008) and representations are unavoidable (Riessman, 1993). Weber and Mertova (2007) provide the following criteria for verisimilitude in narrative research: representations resonate with the researcher and representations are plausible. I believe the representations here meet this definition, and this narrative and the process I undertook to create it is made here transparent. In both this chapter and those that follow, I share selections of data, how I analyzed data, and my ultimate conclusions derived from the data. Despite my confidence in meeting the criteria of verisimilitude and transparency, I struggle with the idea of trustworthiness.

Completing this dissertation study took over two years. Allowing so much time to pass made writing a narrative inquiry in which I am a participant difficult. Professional and personal changes resulted in profound changes in me. I am different from the woman who began writing this document in 2013. Reading early drafts make clear how removed I am from 2013 Bridget. She is untested and idealistic. I’m not even sure I like her. I suppose if I read this in a few years, I won’t recognize the woman I am at this moment. Valerie Janesick (2015) explains the problematic relationship between writing and self: “We think that we are the words we write, yet our words are fleeting, or impermanent. They are the words I am writing at this moment, but when this book is finished, I will change and you will change” (p. 42).

During a poetry writing class I took a few years ago, I composed the following:

If we stood in an elevator- my past self and I-

Would I recognize me?

Or would we stare at our shoes,

Wait for the doors to slide open,
Walk away without a hello?

Written long before I embarked on the dissertation journey, this poem manages to capture the problematic nature of the ever-shifting self. Because of the impermanence of truth, I struggled with conceptualizing this dissertation. I agree with Hatch (2002), dissertations should represent truth. In twenty years, when some future graduate student stumbles on my dissertation online, s/he will read it with the assumption of truthfulness. But as I reread the document, sections written early in the process felt fallacious, the Bridget depicted on the page a stranger. One afternoon, while working on this document amid growing unease about its truthfulness, the memory of Rene Margritte’s *The Treachery of Images* (1928-29) popped into my head. Margritte plays with reality and representation through his simple illustration of a pipe and the declaration below it, “Ceci n’est pas une pipe.” A photograph of the painting can be viewed online: [http://collections.lacma.org/node/239578](http://collections.lacma.org/node/239578).

*The Treachery of Images* is a pipe, but people’s beliefs about pipes are denied. You cannot fill it with tobacco. You cannot smoke it. It both is and is not a pipe.

Margritte’s painting is a metaphor for this dissertation. This is a dissertation that is not a dissertation. It represents truths that may no longer exist. I was changing. I am changing. My participants were changing. They are changing. Everything is in motion. Truth changed. It changes still.
Chapter Four: Narratives of Technology Use

Overview of the Chapter

“My study is a hot mess. I’m not observing what I thought I would,” I complained to my husband after visiting my teacher participants earlier in the day. He shrugged and responded with the following quote: “The best-laid schemes o’ mice an men/ Gang aft agley” (Burns, 1785). His application of the well-worn saying was perfect. Initially, I panicked because this study did not take shape the way I envisioned. I worried there wasn’t a story in my data. My researcher’s journal reflects my fears, “I’m worried there isn’t a story here…Have I made a mistake?” As time passed, I discovered stories- not the stories I had expected, but ones I believe worth telling.

This chapter focuses on the stories of technology use by my teacher participants, Samantha and Martin. The sharing and examination of their stories follows the sequence outlined in Figure 7.

This chapter begins with a restatement of the research puzzle and continues by describing the three-dimensional inquiry spaces in which the stories of experience occurred. I discuss the importance of the spaces in which the stories shared here occurred and describe the classroom spaces in detail. Next, I share details about technology use at Hurston and how institutional processes impacted Martin and Samantha. Then, I share the chronology of technology use during the study months. Following this, I relate stories of experience organized according to the levels of the SAMR Model. At each level of the SAMR Model, I take a step back from the stories and reflect on my findings as a co-participant and fellow teacher. Finally, identification and
explanation of threads found in the narratives are shared. As the threads are described, the theoretical framework discussed in chapter two is revisited and reconsidered. Unlike other qualitative dissertations in which all analysis is shared in chapter four, the following chapter in this dissertation extends the discussion of threads by addressing the ways in which each responds to the research puzzle.

Figure 7. Sequence of chapter four.

Restatement of the Research Puzzle

The stories that follow in this chapter are tales of experience generated from my participation and observations in two classrooms over the course of five months. Through considerations of these stories, I address the following research puzzle:

What might I learn about teaching with technology from two middle school ELA teachers utilizing technology in a high-minority, low-income school? In what ways might participants’ stories mirror or differ from the grand narrative of technology use in high-
minority, low-income middle schools? In what ways might this inquiry expand general knowledge of technology use in high-minority, low-income, middle-level classrooms?

**Description of the Inquiry Spaces**

When I taught middle school, one of my favorite passages to use as an example of descriptive writing comes from the first page of Patrick Suskind’s (1986) novel, *Perfume: The Story of a Murderer*:

In the period of which we speak, there reigned in the cities a stench barely conceivable to us modern men and women. The streets stank of manure, the courtyards of urine, the stairwells stank of moldering wood and rat droppings, the kitchens of spoiled cabbage and mutton fat; the unaired parlors stank of stale dust, the bedrooms of greasy sheets, damp featherbeds, and the pungently sweet aroma of chamber pots. The stench of sulfur rose from the chimneys, the stench of caustic lyes from the tanneries, and from the slaughterhouses came the stench of congealed blood. (p. 3)

Suskind then describes the smells emanating from the people in the city, “sweat and unwashed clothes” and “rancid cheese and sour milk and tumorous disease” (p. 3). Suskind’s city stinks. I loved watching my students squirm and make faces as we read it together for the first time. If this novel was a narrative inquiry, I think scholars would approve of the way Suskind primes his readers for the importance of smell by focusing on it in the first pages of the novel. Suskind starts with the establishment of space, specifically the place commonplace (Clandinin & Connelly, 2000; Clandinin, 2013). In the novel, understanding the centrality of smell and its relationship to place is essential for understanding the story. Likewise, in this study, understanding the classroom environments is essential to understanding stories of experience.
occurring in those places. Clearly, Suskind and I are not on the same skill level, but I strive here, in my own humble way, to make the environments in both classrooms feel alive for my readers.

After many years of visiting classrooms at the secondary level, I believe each class period has a personality and vibrancy all its own. I remember in my own teaching practice the stark differences between class periods. Although the physical space didn’t change, the energy in the space did. In some class periods, the environment was hushed, serious, and focused. In other class periods, the air buzzed with excitement, and students chatted, questioned, and created. Because of these distinct class period personalities, understanding the environment existing in the classroom space during a specific class period is pivotal to understanding the teaching and learning occurring in that space. In order to help my reader understand the classroom environments in which the technology use observed in this study occurred, I preface the stories of technology use experienced in this study by describing the environments of the observed classes. First, I focus on Martin’s first period, and then I describe Samantha’s second period classroom.

**Martin’s first period.** In a photograph I took of Martin on April 29, 2015, he stands in the middle of a sea of students focused on laptop computers. A pen tucked behind an ear and his shirtsleeves rolled up, Martin leans over a student’s desk and stares intently at a laptop screen. He frowns as he tries to discern why a webpage isn’t loading correctly. The student, too, is staring at the screen with a grimace. Together, they try the usual troubleshooting tactics. A moment after I snapped the photograph, Martin and the student fixed the problem and Martin moved on to observe other students’ progress with the assignment.

The rolled up sleeves and pen at-the-ready featured in the image are indicative of Martin’s teaching and management style. Upon entering the classroom, it often took a moment
for me to locate him. He frequently sat in a student desk with a small group of sixth graders clustered around him and focused on a specific task. Martin felt his sixth-grade students still at an age where they wanted to please their teacher and acted accordingly. In my notes, I described instances in which Martin’s students basked in his attentions during small group instruction. Usually, a mere look of disapproval from Martin was enough to change undesirable student behaviors.

Instruction in Martin’s classroom was organized into stations set up around the room. Students not working with Martin split into two groups. One group worked on iReady. When I visited the classroom, students on iReady eagerly showed me their screens and explained where in the program they were working (vocabulary, comprehension, fluency, etc.).

The third group read novels independently selected at the classroom or school library. Tattered paperbacks tumbled over one another and spilled onto the floor from a blond wooden bookcase lining the wall under a bank of windows. I never observed a student select a book from the shelf in class, but many students carried hardcover YA novels covered in a thin clear plastic skin and labeled with a school or public library barcode.

Most days, the mood in class was focused and students engaged in the assigned activity. Students spend about 15 minutes in each group, rotating through all three in a class period. Martin cited moving from one group to another as an important part of his management plan. He claimed moving from group to group provided students with an opportunity for a quick stretch of the legs and mental break. While most class periods followed this routine, stations sometimes changed to accommodate assignments requiring more time or direct instruction. For example, during one observation students engaged in a WebQuest requiring more than 15 minutes to complete. During this assignment, students moved through only two stations, allowing more time
in each. On another occasion, Martin provided direct instruction to the entire class and did not utilize stations during the class period.

Because most class periods involved changing from one station to another, furniture in the classroom was organized for ease of movement. The group led by Martin was located at the front of the room, desks clustered together. The independent reading group sat at desks arranged in short rows and the iReady group was located in student desks facing the back and right wall of the classroom. Situated in this way, student sat with their backs to the classroom, but their computer screens were easily visible from anywhere in the room, enabling Martin to monitor activities with a quick glance.

**Samantha’s second period.** When I walked into Samantha's second period class for the first time, I immediately noticed the bright sunlight from windows lining the back of the classroom. I learned later that these windows made controlling the temperature in the room a challenge, too hot in summer and too cold in winter, but on my first day, I didn't notice. A banner displayed prominently on one wall stated, “Let the choices you make today be the choices you can live with tomorrow.” Two bulletin boards displaying student work hung on the walls and a built-in bookcase filled with young adult literature stood in a corner.

Like Martin, Samantha utilized stations with her students, but the structure was different. Instead of switching from one station to another after 15 minutes, students stayed in one station all period. The next day, they would report to a different station and work in it all period. Also different was the number of stations in the class. Martin’s class usually contained three simultaneously running stations. In Samantha’s class, only two stations occurred at a time: a computer station where students worked through the iReady program and a station for teacher-
led or independent work. At times, student desks were clustered in groups of five and six. Other times, desks stood in rows or a double horseshoe formation.

Not yet teenagers, but no longer children, Samantha’s students exhibited behaviors typical of both. The picture below was taken in Samantha’s second period class on May 7, 2015.

Figure 8. Student with coloring book.

I snapped the picture while Samantha was standing at the front of the room explaining the importance of word choice in poetry. Packets containing a poem and comprehension questions sat on students’ desks. As Samantha talked, a student seated near me opened a coloring book up on her desk and took out a fistful of markers. I created a haiku based on the image and my observational notes that included a brief conversation with the student about the coloring book and markers.

Markers clutched in hand

Coloring book spread wide


This haiku and photograph illustrate the in-between space the eighth grade students in Samantha’s class occupied. In this instance, the student’s coloring book was not one of the trendy adult coloring books that cluttered store shelves this past Christmas; rather, it was a
child’s coloring book with large spaces to color and simplistic scenes of fairies and flowers. This event stood in juxtaposition to an earlier class period, when I observed students discussing a friend who recently announced her pregnancy. My observation notes are full of the duality of child and adult typical of adolescence and ever-present in Samantha’s classroom. I compiled my notes on instances illustrating adolescent behaviors and created a found poem:

Let's a fart rip,
they all freak out.

Black marker hearts drawn on neon green notebook cover.

Wandering.

“Miss, I need you to help me!”

Not working- watching a music video.

"When you pierce your tongue..."

An illicit earbud, listening to music.

Silk flower headbands.

“Make him stop looking at me!”

Teacher ignores them.

While Samantha sometimes found her students’ behaviors challenging, students were frequently on-task when working with technology. For example, an activity in which students created a narrative with a partner through Google Docs was the most productive and successful class period I observed. All students spent the entire period engaged in consulting with their partner and typing a narrative.
Chronology of Technology Use by Participant

When reviewing the stories of technology use I experienced, I organized my data in two ways. Discussed in chapter 3, I first created chronologies of technology use by teacher. In both classrooms, I found technology use increased and diversified as the year progressed. Second, I considered both participants’ uses of technology together and grouped the individual uses of technology by type (i.e. writing, viewing, etc.). I then determined on which level of the SAMR Model the group best fit. When organized using the SAMR Model, I found an inverse relationship between the more transformative levels of the SAMR Model (modification and redefinition) and the quantity of activities in the classroom that could be categorized on those levels. I found only one use of technology meeting the criteria for redefinition on the SAMR Model. The chronologies and description of technology use at the various SAMR Model levels follows.

Overview of Martin’s instructional uses of technology. Figure 9 below illustrates Martin’s use of technology in his sixth grade ELA class. Martin’s stations facilitated the use of technology every day he had access to computers. Adaptive instruction was identified as a use February through May and referred to the use of the iReady program. WebQuests were the second most frequent use of technology in instruction. In total, Martin employed four different WebQuests in instruction. He did not create the WebQuests; rather, he located them online and made modifications for his instructional needs and students’ abilities. Initially, he used Zunal.com, a free online database of user-created WebQuests for education. Searchable by keyword, subject, and grade, Martin located a WebQuests intended to build his students’ background knowledge of the Great Depression, the setting of the class’s anchor text, *Roll of Thunder Hear My Cry*, read March through May. Later, Martin located WebQuests through
Google searches with the same instructional goal of supporting understanding of the novel.

Martin made modifications to student printed materials and created or modified directions to suit his curricular needs and students’ ability levels.

<table>
<thead>
<tr>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Adaptive instruction (iReady)</td>
<td>• Adaptive instruction (iReady)</td>
<td>• Adaptive instruction (iReady)</td>
<td>• Adaptive instruction (iReady)</td>
<td>• WebQuest (background knowledge for whole-class novel)</td>
</tr>
<tr>
<td>• WebQuest (background knowledge for whole-class novel)</td>
<td>• WebQuest (background knowledge for whole-class novel)</td>
<td>• Clip of movie based on whole-class novel</td>
<td>• WebQuest (background knowledge for whole-class novel)</td>
<td>• District reading assessment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Quiz on paragraph structure</td>
<td></td>
<td>• Typing practice</td>
</tr>
</tbody>
</table>

*Figure 9. Chronology of Technology Use in Martin’s Classroom*

**Overview of Samantha’s instructional uses of technology.** Samantha used technology in a variety of ways in her classroom. Each month included cooperative and independent assignments completed using technology. Uses ranged from whole class activities such as the quiz using Socrative described earlier to individual students reading an e-text version of the class novel, *To Kill a Mockingbird*. Students engaged in small group and partner assignments as well. Working with a partner, students wrote narratives. In groups of three or four, they researched African American musical genres and composed an essay sharing their findings. The timeline below chronicles these differing ways Samantha used technology in instruction during this study (Figure 10). It does not include homework, which was consistent throughout the semester.

Students completed lessons in iReady, an adaptive reading program, at home for completion credit.
Both Martin and Samantha used rotations as a class structure for including technology in instruction. In each classroom, the rotation structure resulted in some students working independently on technology, freeing the teacher to engage in small-group instruction with other students. Although both teachers used stations, they structured them differently. In Martin’s classroom, students stayed in one station for about 15 minutes and then transitioned to another station. This occurred three times in a period. Samantha’s students stayed in one station all period. The next day, students worked in a different station.

Stories of Experience Organized According to the SAMR Model

The SAMR Model provides a method for organizing the stories of technology experience. The model gives me a structure for my stories. Like socks in a drawer, folded and arranged by use, (thin trouser socks, tall and thick boot socks, cushioned athletic socks, and fuzzy socks for lazy Sunday afternoons), the SAMR Model levels enable me to arrange the stories of technology use by type. Ultimately, this arrangement guides my presentation of findings, giving the prose and poetry I use to describe these stories structure and meaning beyond
the stories themselves. Below is the SAMR Model figure from chapter three (Figure 9). It is include here for ease of reference when examining the following chart.

<table>
<thead>
<tr>
<th>Substitution</th>
<th>Technology is a direct substitute for a technology-free way of teaching and learning.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augmentation</td>
<td>Technology is a direct substitute for a technology-free way of teaching and learning with some functional improvement.</td>
</tr>
<tr>
<td>Modification</td>
<td>Technology is used to redesign the task.</td>
</tr>
<tr>
<td>Redefinition</td>
<td>Technology is used to create new tasks that could not exist without the use of technology.</td>
</tr>
</tbody>
</table>

*Figure 11. SAMR Model Chart*

After the creation of the chronologies in the previous sections, I reviewed each discrete activity and grouped them together by kind, much like socks in a dresser drawer. For example, I grouped the quiz on paragraph structure given by Martin and the quiz on vocabulary created by Samantha together under “formative assessments.” The chart below (Figure 12) pairs each instructional activity with the SAMR Model level to which it best fits. Next to each activity, the technological tool(s) or resource(s) utilized during instruction are listed.

The next sections of this chapter tell the stories of technology use arranged in the chart above. Starting with Substitution and addressing each level in turn, I share the stories of experience behind the instructional activities organized in the chart. Student voice, photos, and archival data are included in the tellings. Following each section, I take a proverbial step back and reflect on my experiences in the classrooms, pairing my understandings with the narratives.
<table>
<thead>
<tr>
<th>SAMR Model Levels</th>
<th>Instructional Activity</th>
<th>Technological Tools/Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substitution</td>
<td>Lecture</td>
<td>Digital projector and Power Point; Google Slides</td>
</tr>
<tr>
<td></td>
<td>Listening (whole-class read aloud)</td>
<td>YouTube</td>
</tr>
<tr>
<td></td>
<td>Comprehension questions</td>
<td>Google Docs</td>
</tr>
<tr>
<td></td>
<td>Viewing (movie for theme comparison to a novel)</td>
<td>Digital projector and DVD player on teacher laptop</td>
</tr>
<tr>
<td>Augmentation</td>
<td>Formative assessments (quizzes)</td>
<td>EnGrade; Socrative</td>
</tr>
<tr>
<td></td>
<td>Reading (e-texts)</td>
<td>Various websites</td>
</tr>
<tr>
<td></td>
<td>Viewing (video of a poem; (video clip from a movie)</td>
<td>PoeticTouch.com; YouTube</td>
</tr>
<tr>
<td>Modification</td>
<td>Collaborative writing</td>
<td>Google Docs</td>
</tr>
<tr>
<td></td>
<td>Research (WebQuests; social media campaign)</td>
<td>Various websites</td>
</tr>
<tr>
<td>Redefinition</td>
<td>Adaptive instruction</td>
<td>iReady</td>
</tr>
</tbody>
</table>

*Figure 12. Instructional Activities Organized by the SAMR Model*

Some data that did not fit into the model above. For example, technology was also used as a classroom management tool. This does not fit into the SAMR Model, but is a use that warrants mentioning. I observed technology used in this way twice during the study. In Samantha’s classroom, an online timer was used during a group activity. The digital projector displayed the timer so students could refer to it during the activity. Martin used movies as a classroom management tool. Twice towards the end of the year, I observed students watching movies on the projector in Martin’s classroom. In one instance students completed vocabulary worksheets while watching the film. In the second instance, one of the last days of school, the movie was not directly connected to the curriculum and no instructional tasks accompanied the viewing. On this day, Martin was supervising other teachers’ students in addition to his own.

Three additional pieces of data did not fit into the SAMR Model. Data focused on the physical state in which the school returned the laptops to teachers following state-mandated testing, challenges with vandalism of technology, and students’ technological skill deficits did
not fit into the model but are important pieces of data because they directly impacted teachers’ instructional uses of technology. Martin and Samantha shared these experiences. These stories and their implications are explored later in this chapter in the section on threads that follows the stories organized according to the SAMR Model. Questions and wonderings generated as I observed and participated in classes are woven throughout the descriptions below and are identifiable by italicized text. Some of these questions and wonderings were addressed and answered in my conversations with Martin and Samantha, but many remain and continue to drive my curiosity after the conclusion of this study.

**Substitution.** I grouped four types of activities in the substitution section of the SAMR model. At this level of the SAMR Model, technology is a direct substitution for a technology-free way of teaching and learning. The use of technology is not changing or transforming instruction in any way. I observed all four of the following substitution activities in Samantha’s classroom. I did not observe any activities at the substitution level in Martin’s classroom.

**Lecture.** The first time I witnessed a substitution activity in Samantha’s classroom was early in the study. I walked into the room a few minutes after the start of class and Samantha stood next to the Smart Board lecturing on common story elements. She projected her lecture notes, in Google Slides, on the screen. A photo I took of the lecture slides is below (Figure 13).

As evidenced in the photograph, each slide presented information on a specific story element. The slide on imagery is shown above. Other slides included setting, tone, and metaphor. As Samantha talked, students copied information from the slides into a provided graphic organizer.
I stood by the windows at the back of the classroom and directed my attention to the projector. *Why did Samantha choose to keep the edit panel visible throughout her lecture? The screen felt busy and crowded.*

Students sat in desks arranged in a large circle. Five students sat with their backs to the projector. To see the screen, they had to turn 180 degrees in their chairs, which they did infrequently. A few students appeared zoned out during the lecture, staring into space and neglecting to write any of the information down in their graphic organizers.

*Was this information important? Should students write some of this down? When I taught imagery, I did so by sharing examples from literature with my students. What is gained by presenting it in this format? What is lost?*

**Listening.** The second substitution activity I observed in Samantha’s classroom focused on listening. During one of my visits in April, the class was beginning its study of Harper Lee’s *To Kill a Mockingbird*. The Smart Board was on and showed a YouTube page featuring the audio of the novel. Read by the actress, Sissy Spacek, students listened to the first pages of the novel through a set of speakers while reading along silently in the text. Students chose how they
wanted to read the text, either online or from a traditional book. Half the students in class held a paperback edition of the novel and half accessed the text digitally, either on a laptop computer or their personal cell phone.

I sat next to a female student reading on her cell phone. I watched as she turned pages with a touch of her index finger to the screen.

“Mind if I read with you?” I ask. She nods and shifts her phone so I can more easily see the screen. I smile as the class laughs at the scene in which cooties are found in an Ewell’s hair.

*Should I ask her why she chose to read the book on her phone? Like her peers, she is intent on the story. Would my words break the narrative’s hold? Ultimately, I can’t bring myself to ruin the moment.*

As the audio progressed, Samantha periodically paused the narration to ask basic comprehension questions such as “Who is the narrator?” and “Does she have a brother?” Students raised their hands volunteering answers. For one question, Samantha told students to turn and discuss their answer with a shoulder partner. Engagement throughout the reading was high. All but one student, who put her head down, listened and read along.

Students were less interested in the novel the next time I visited the classroom. While the audio was on and students were tasked with reading along, I noticed five students switching back and forth on their phones from the e-text of the novel to other applications. One girl sat with an ear bud concealed by her hair listening to the streaming music application, Pandora. A boy nearby played a game on his phone. Another student browsed Google.

The student on Google noticed me peering over his shoulder and switched back to the novel. He looked up at me guiltily. I put on my best disapproving teacher look and shook my head at him. He looked down at the text. Our wordless exchange had embarrassed him and
refocused his attention. As I walked around the room, I wondered if I should I say something to off-task students.

_in how much policing of distracted behaviors should I engage? As a participant researcher, did my role include the enforcement of classroom rules?

By my second visit, two websites providing the text online for free were listed on the dry erase board. One website with the audio of the novel was also posted. Although students listened to the audio of the novel as a class only twice during my observations, the activity was repeated between my visits, making it a familiar routine by my second classroom observation.

_Comprehension Questions._ “We’re meeting in the drama room today,” one of Samantha’s students intercepted me on my way up to the classroom. “The room is really hot,” she explained. I followed her down a flight of stairs and narrow hallway. Our destination was large and dim. Four rectangular tables surrounded with navy blue plastic chairs stood scattered across the floor. Plugged in at the front of the room sat a laptop cart. Samantha greeted me and explained that I was standing in the new drama classroom. The room was just completed as part of a renovation and expansion of the building. A drama class didn't yet exist in the school, but the drama club used the space. Samantha was its faculty advisor.

I circled around the room, peering over students’ shoulders as they turned on laptop computers and pulled pieces of notebook paper out of their folders. “We’re answering questions,” a group of boys explained to me. A listing of comprehension questions about the whole-class novel, _To Kill a Mockingbird_, were posted on a Google Docs page and the link was shared with the class on the board at the front of the room. As I walked around the room, I saw a few students pull up the text on their cell phones. They scrolled through the e-pages searching for answers to Samantha’s questions. Others used laptops to view webpages with the e-text. Still
other students held paperback copies of the novel and referred to them as they worked. All students answered the questions on a piece of notebook paper. By the end of the period, most students finished the questions and turned in their answers to Samantha. A few students disengaged from the lesson. One sat folded over in a chair like a rag doll, her head resting in her lap. A laptop computer sat untouched at her feet. She sat in this position for the duration of the class period.

*How is that position comfortable? What is prompting this complete lack of engagement? Is she okay? Is working in the drama room impacting her perception of the importance of this activity?*

After class, I asked Samantha about the change in location, “I’m here because my Smart Board isn’t working upstairs and it's hot upstairs,” she explained. It was late May and warm outside. The air-conditioning system in Samantha’s room wasn’t working. In addition, her Smart Board wouldn’t turn on. In total, Samantha held class in the drama room for two weeks. During one of our conversations, she explained what happened, “So all of my outlets stopped working.” I looked at her incredulously.

“None of the outlets worked?” I asked.

Samantha laughed and said, “This is terrible! So none of the outlets worked. The Smart Board doesn't work anymore. None of the outlets work… I feel like I’ve done something wrong to the school gods. It's terrible.” Samantha’s classroom was the only location in the building in which the power outlets and air-conditioning stopped working. By the end of the year, the outlets still did not work, but the air-conditioning was working.

*Would a lack of electricity and air-conditioning in a classroom for over a week be acceptable at a more affluent school? I doubted it.*
**Viewing.** Two of the class periods that met in the drama room watched *Remember the Titans* (2000), a movie about racism and football in small town America in the 1970s, for the entire period. I observed one of these class periods. The room was dark and students were stretched out across the furniture. Several were sitting in one chair with their feet up on another. Notebooks and worksheets rested on chairs positioned by their sides. Samantha played the DVD on her laptop. Her laptop was connected to the digital projector and a pair of speakers. Samantha stopped the movie at predetermined points and asked students to discuss, as a class and then with a partner, how various themes of the movie compared to those of *To Kill a Mockingbird.* Students completed a worksheet comparing the movie and novel as they watched the film.

All but one student actively watched the movie. They complained when Samantha paused it and asked comprehension and analysis questions. The disengaged student wore one ear bud, concealed by her hair. I heard music pulsing as I walked by.

*Has Samantha not noticed this student isn’t paying attention to the movie? The distractions technology allows seem constant. How does a teacher win students’ attention? How does s/he keep it?*

**Reflecting on substitution.** Making runs through my personal and professional narratives. My hobby, garment sewing, is also an act of making. I taught myself to sew a few years before the completion of this study. I am fascinated with garment construction and love getting lost in the act of sewing. Making something wearable from a flat piece of fabric feels like magic.

The act of sewing played a role in this dissertation I did not anticipate. As I sewed, my mind often wandered back to classroom visits and my analysis of the classroom narratives shared in this chapter. As I fed fabric under the needle and pressed open seams, I found myself making
two things- a garment and meaning from my classroom visits. Playing around with this idea of tandem making, I scrawled the following on a notepad next to my sewing machine:

whirr… whirr… whirr…

fabric glides under my fingertips

I remember Samantha’s classroom

technology makes life easier

whirr… whirr.. whirr…

hungry little teeth pull fabric straight

students listen to music

20% distraction, 60% convenience

whirr… whirr.. whirr…

fabric is consumed by the needle

entertainment trumps instruction

is this the price of implementation?

whirr… whirr…click.

The seam is done.

During my master’s program, one of my professors suggested that all texts should be fully written in the mind first, and then transposed onto paper. He suggested the real work of writing had nothing to do with words on a page. Writing is a mental exercise. Heeding his advice, I first composed much of this chapter and the next at my sewing machine.

In particular, I thought a lot about the activities at the substitution level in Samantha’s classroom while making a mustard crepe skirt. I do not think negatively about these activities because they fit into the least transformative level of the model, but I do wonder whether or not
using technology in the ways described could be improved. In particular, the lecture via Google Slides felt stiff and stilted. The physical arrangement of the chairs, leaving students with their backs to the Smart Board sent a message to students that the notes on the Smart Board were not important.

I also wondered about students who distracted by technology. During every visit to Samantha’s classroom, I noted as least one student listening to music. This is not inherently problematic if students are completing assigned work while listening, but in every case, students abandoned the class activity. Instead of working on assignments, students browsed Pandora or YouTube. In some cases, I saw students watching YouTube videos, their assignments cast aside. Students commonly indulged in games, messaging, and music were common entertainments in which students indulged in class. They could not possibly listen to the audio of *To Kill a Mockingbird* and music on Pandora at the same time. Were these sly behaviors just the cost of using technology in the classroom? Could their use be controlled? Should it? Thinking about how students spend time with technological tools produced more and more questions.

I asked both Samantha and Martin about students’ tendency to become distracted when using technology. Samantha knew how distracted her students could become. She stated, “Obviously, when using technology you have to trust them to be on the right thing at the right time and that's a struggle that, you know, I'm still working on.”

In Martin’s classroom, I didn’t notice students listening to music or watching videos during any of my visits. However, Martin shared that technology was sometimes a distraction. One instance occurred during one of my class visits, but I was working with a group of students on a WebQuest and did not notice events unfold. Martin related the incident to me later:
Most of them are like looking up Oklahoma City Thunder, stuff like that. I had one… I walked over to him and I said this is the only place you need to be. He was on iReady. I walked away and he went directly back to looking at basketball stuff. So you know, he had to stop using the computer.

The student was allowed back on the computer the next class period.

There was one instance during the year when a student’s distracted behavior online resulted in disciplinary action from Martin. The instance occurred during a class period not observed in this study. Disgusted and amused by his student’s action, Martin shared:

There was one really bad. It was ridiculous. This little kid in sixth looked up ‘girls’ butt cracks.’ My co-teacher was in here and she just came over. I saw her close the computer and like tapping out. She said, “You know what so-and-so was looking up?” and I said no. I said, “Well what was it?” She said, whispering, “Girls’ butt cracks.” I was like “What?!”

The internet provides a unique management challenge for educators. The incident with Martin’s student reminds me of an event early in my teaching career. One of my adolescent male students brought his father’s porn magazine to school and looked through it with his buddies at lunch. He was disciplined, and the magazine was taken away. Today, it isn’t as easy as taking away a single magazine. In the world of the internet, blocking an offending webpage(s) without taking away the entire internet is difficult.

I reflected back on my research puzzle. How do the stories at the level of substitution respond to my wonderings? I learned technology makes Samantha’s life as a middle school ELA teacher easier. Utilizing e-books and Google Docs prevented a lack of materials and copy machine limits from impacting instruction. Samantha’s use of Google Slides during lecture
replaced the need to write notes on the board. Technology provided a handy work-around. Many mornings, a broken copy machine resulted in massive changes in my instructional plans. Posting questions online rather than printing off 30 copies would certainly have made my life easier. Playing the audio book through YouTube saved her from reading the same pages aloud multiple times in a single day, an activity that can strain a teacher’s voice.

Next, I wondered how technology as a distraction responded to my puzzle. I learned that in both classes technology had the potential to distract students from academic tasks. I reflected on my conversations with students during focus group interviews. During these conversations, I learned students used technology outside of school primarily for entertainment and communication. I noted in my researcher journal struggling to shift their focus from these recreational uses of technology during our conversation.

All students reported watching TV and movies online daily. They talked a lot about posting selfies, photos taken of themselves on their cell phones, onto Instagram, an-image based social media site. During the first student focus group interview, Travis claimed, “I'm on there all day every day.” Students in the second focus group echoed his enthusiasm for Instagram. Gina shared, “Instagram is a daily activity for most people at this table.” All the students nodded their agreement. Even the one student who did not have a phone reported that she logged into Instagram everyday through a laptop or a friend’s phone. Students identified one teacher, their current history teacher, as an Instagram user. The students sent him questions about assignments and course content to which he responded regularly.

Although Martin and Samantha both expressed a desire to match students’ outside of school and in school technology experiences during our conversations, they required students use technology for academic tasks like research, not entertainment and casual communication-
common adolescent uses of technology. I wondered if students’ distracted behaviors when using technology were a symptom of a mismatch between the how they usually used technology and how Martin and Samantha wanted them to use it.

**Augmentation.** I assigned three activity types to the level of augmentation. At this level in the SAMR Model, technology is still a direct substitution for a technology-free way of teaching and learning, but unlike the activities at the substitution level, technology provides some functional improvement. In this study, technology use at this level included conducting formative assessments, reading e-texts, and viewing videos and movie clips.

**Formative assessments.** Students in both Martin’s and Samantha’s classes completed quizzes using online platforms. Martin used EnGrade, an online system purchased by the district for its grade book capabilities. In addition to keeping track of grades, teachers could set up quizzes for students online. Quizzes could be multiple choice, true or false, or short answer. Martin quizzed students on introductory paragraphs by requiring they type an original paragraph into EnGrade. The quiz was one of the stations students rotated through during the class period. EnGrade saved students’ written responses but did not grade them because the system does not have automated essay-grading capabilities. Martin logged into EnGrade at a later point in time and graded student responses. Taking the quiz online gave students access to spellchecking and grammar checking tools, resources unavailable when taking the test off-line.

Samantha conducted formative assessments through both EnGrade and Socrative, an online learning platform through which teachers create assessments. The quiz administered in EnGrade assessed students’ understanding of the structure of a traditional essay. Students responded to multiple-choice questions and manipulated boxes around their screens, putting the parts of a paragraph (for example, the hook and thesis) in the order they learned was correct.
during an early class period. EnGrade scored students’ quizzes immediately and a grade appeared on the screen for students before they logged out of the program. Walking around the room, I notice scores ranging from 60% to 100%. After seeing his score of 60%, one student tells me, “I read better than that.” The system automatically uploaded scores into the teacher’s grade book.

Through Socrative, Samantha created a multiple-choice assessment for vocabulary terms studied in class. The quiz was the Do Now activity for the class period, an activity completed as soon as students entered the classroom and without direct teacher instruction. The Smart Board displayed directions for the quiz for students. It listed the website and test identification information as well as a warning that the test was timed. Once logged in, students had only five minutes to complete the quiz.

*How much easier are online quizzes to grade than the paper-pencil quizzes I used to give my students? How much time does this save teachers? What can that extra time be used to accomplish?*

All students completed the three-question quiz in the allotted time. As students responded, Samantha could see their responses by logging into her teacher account with Socrative. Students’ answers were graded immediately and their score appeared on the computer screen as soon as they finished the assessment. The quiz took required students identify the correct definition of a word from several possible answer choices. A sentence in which the word was correctly used was provided. Socrative was not connected to Samantha’s grade book like EnGrade, so she manually uploaded student scores during her planning period.

*Reading.* In the stories about comprehension questions and listening in the previous section on substitution, I described students reading the novel, *To Kill a Mockingbird*, on laptops.
and their personal cell phones. In some e-text versions accessed by students, they could highlight text, look up words, and create notes. Samantha explained the use of e-texts was not driven by those capabilities. Instead, a lack of paperback novels resulted in the use of digital versions of the text. She explained, “So they're using their phones was kind of like an act of not having enough stuff to use.”

*Would Samantha use e-texts if she possessed enough hard copies of the novel for all students? Was the decision to use e-texts driven by a desire to use technology, necessity, or a bit of both?*

Samantha shared that she liked the idea of using e-texts, but found they presented challenges when she required students annotate the text, “So what I had to do… I have to use like a double entry journal but it's not like a double entry journal. It's like a worksheet. Like taking notes and summarizing. It worked well.” Students turned in their notes and summaries for credit. Samantha further explained that notes on paper “frees them to use whatever platform they need.”

*Viewing.* Both Martin and Samantha employed viewing videos or portions of videos into their instruction during this study. In Martin’s classroom, students viewed a ten-minute clip from a movie based on a novel the class was reading together. Samantha employed a short video illustrating a poem read in her classroom. In both instances, the viewing activities enhanced students’ understanding of a text.

Students in Martin’s class read the novel *Roll of Thunder Hear My Cry* by Mildred D. Taylor. Set during the Great Depression, the novel addresses racism and poverty in the context of sharecropping in the rural south. Martin worried students would struggle to understand the novel and felt it important students recognize how these issues shape the action of the novel. Towards
this end, he found a 1978 movie based on the novel available on YouTube and required students
view a clip he selected.

Students viewed the clip individually on laptop computers. Students’ desks were
clustered together and Martin moved from one student to another, typing his login credentials in
the laptop. Student credentials didn’t allow access to YouTube, but teacher credentials did. The
credentials were good for 45 minutes, after which time, they had to be reentered for continued
access. After ten minutes, all six students in the rotation group logged in and viewed the movie.
They sat with bulky black headphones resting over their ears. Beside each laptop, a worksheet
and pen or pencil sat on the desk. Martin tasked them with watching fifteen minutes of the movie
and filling in a worksheet. Martin used the same directions for both groups. Each group consisted
of a mix of academic abilities. The entire class could view the movie clip at once, but Martin
wanted students to view at their own pace, pausing and re-watching as needed. The worksheet he
gave them featured a chart with two columns. The header of one column read, “Similarities
between novel and movie.” The other header said, “Differences between novel and movie.” A
tiny URL Martin created leading to the YouTube movie clip was printed at the top of the page.
Students in the first rotation group watched the movie clip all the way through and then filled in
the worksheet. I hovered by the group, answering questions and making sure students remained
on-task. Students in the first group rarely paused the video, watching it in its entirety before
answering the questions.

In the second rotation group, students took advantage of the capabilities of the YouTube
video. They paused the video, re-watched parts, and filled in the worksheet as they viewed the
clip. Compared to the first rotation group, their responses on the worksheet were more robust,
mentioning details omitted by the first group of students.
Why did one group play the video all the way through while the other paused and replayed parts of the video? What prompted one group to utilize the features of YouTube and prevented the other group from doing so? Ultimately, did it matter how students interacted with the video? Student responses across the two groups appeared similar as I read over their work and answered their questions.

The short video in Samantha’s classroom illustrated a poem read by the class. I hovered in the back of the classroom taking notes and photographs as students flipped open a worksheet packet to the poem, “Those Winter Sundays” by Robert Hayden.

Figure 14. Hayden poem.
Samantha told students their goal was to write the “gist” or a summary of the poem. Once all students sat with the page of the packet that contained the poem open in front of them, Samantha hit play on an audio version of the poem open on her computer. A gravelly voice with a heavy British accent filled the room.

“I can’t hear him!”

“What is he saying?”

The class erupted in confusion. Samantha hit the stop button, waved her arms, and motioned for calm. Her allergies were bothering her and her throat was sore. She grimaced as she called for her students’ attention. “Fine, fine,” she said, “I’ll read it to you.” She launched into the poem with a scratchy and hoarse voice, but students remained silent as she read. Once she was done, Samantha turned her attention towards unfamiliar vocabulary terms. She asked what austere meant and was greeted by blank stares. She provided a definition and students jotted it in the margin of the text. She then moved on to the word “office” and was met with resistance. Students argued that her definition didn’t make sense. Several students turned away from the class discussion of the poem and started chatting amongst themselves.

Suddenly, a student hollered from a corner of the room, “Make him stop looking at me!” The offending boy proclaimed innocence. Samantha was unfazed, ignored the argument and asked a question about the poem. From my vantage point at the back of the room, I could see the class devolve. I noted, “Entire session is a fight for classroom control between the class and the teacher.” In an attempt to regain control, Samantha called on a student to re-read the poem to the class. Her peers continued to chat as she read. Samantha then asked students to summarize the poem on their worksheet. I walked around the class and read over shoulders as students wrote their summaries. Not a single student fully understood the poem. They noted details like the cold
morning and the fact the narrator didn’t want to get out of bed, but their understandings were incomplete.

Could a close reading of this poem help students better understand the poem? The poem is short, but students may be unfamiliar with poetry. I wondered if multiple reads of this poem with specific purposes for each read would improve comprehension.

After a few minutes of writing, Samantha projected a webpage on the Smart Board. The website, poetictouch.com, provided video narration of famous poems. Samantha hit play and the poem jumped to life with an artistic rendition of the narrator’s father climbing out of bed and lighting fires on a blustery winter morning. The class settled down instantly and focused on the video. At the writing of this chapter, the website, poetictouch.com, was no longer operable, but the video was still accessible through YouTube (https://youtu.be/aiZnt5ZL4Xk).

“I got it now!” a boy sitting near me blurted out at the end of the video. “The boy is unappreciative of his father!” Samantha didn’t hear him. She was engaged in a conversation with students at the front of the room about the video. He turned towards me with a questioning look.

“Bingo.” I told him. A grin covered his face and he turned his attention to Samantha. Frantically, he waved his hand in the air. Standing by the Smart Board, Samantha cold called on several students, but none expressed the main idea of the poem. The boy near me continued to wave his hand in the air. After a number of answers improved from the previous reading of the poem but still incomplete, Samantha called on the manically waving hand. The boy excitedly shared his answer with the class. He was the first student to articulate the main idea of the poem and Samantha nodded her agreement with his answer.

Reflecting on augmentation.

At their own pace.
I can read better than that.

I got it now!

Bingo.

These lines, pulled from my observation notes and shared in context above played in my head as I made a burgundy knit jacket for my mother. I fussed over the fit of the jacket and contemplated the role of fit in terms of technology and learning. Despite its position as the second least sophisticated level of technology use in the SAMR Model, the classroom visits in which students engaged in augmentation activities were among my favorites in the study.

The visit that most strongly impacted me emotionally was the day in Samantha’s class described in the “Viewing” section above. Watching her student discover meaning through video narration and get excited about his newfound understanding made me nostalgic for my classroom. Before I left Hurston and headed back to my office that morning, I wrote in my researcher’s journal, “Today I miss teaching sooo badly. They are getting it and excited about making meaning. I so miss being part of that.” The evident pride the student experienced when understanding dawned was exciting and, I hoped, motivating. I later told Samantha about the student’s reaction and shared with her some of my notes from the class visit. She laughed and beamed when she heard of his excitement. Not all students understood the poem with the aid of the video, but for one student it made all the difference- a perfect fit.

Considering my research puzzle, the “Viewing” experience in Samantha’s class illustrates the power of technology as an instructional tool in middle-level classrooms. In this case, a well-chosen video not only calmed and focused a chaotic class, it facilitated student understanding.
In Martin’s class, accessing material online proved a challenge. The firewall settings required Martin take special steps, logging students onto computers using his teacher credentials, to maneuver around the school’s firewalls and incorporate movie clips into instruction. Perhaps Martin was lucky. He could access YouTube and other blocked internet content for students. I wonder how many schools block content for everyone in the building, preventing access entirely.

I turned back to the idea of fit and reflected on the challenges Samantha described when having students annotate e-texts. Her story reminded me of my experiences of e-reader use. During my last year teaching middle school, e-readers were the Christmas “It” gift and a few of my students arrived back in class after the winter break with e-readers. They dutifully downloaded the class novel, *A Tale of Two Cities*, and made annotations in the e-text. Problems arose when they tried showing me their annotations for credit. Highlights vanished and, if present at all, comments took three to four steps to access. Once located, comments often appeared jumbled. Massive frustration ensued. One student gave up his e-reader entirely in favor of a paperback with pages on which he could write. Like Samantha, if I had continued teaching with e-text, I would have resorted to paper notes. E-readers seem a perfect fit for technologically inclined students, but the technology isn’t yet sophisticated enough to accommodate ELA instructional practices. I pondered whether or not the sparse research on technology in ELA classes was, at least partially, because of the limitations of technological tools in ELA instruction. As I thought further about what I was learning about teaching middle school ELA with technology, I found that although Samantha was moving against a grand narrative lacking the inclusion of technology in ELA instruction, the limitations of technology hobbled her use of the technological tools.
**Modification.** At the modification level of the SAMR Model, technology redesigns the teaching and learning task. At this SAMR Model level, two types of instructional activities occurred. First, collaborative writing was employed in Samantha’s classroom through the use of Google Docs. Second, both Martin and Samantha gave students research projects dependent on the use of technology.

**Collaborative writing.** The highest engagement during class activities in Samantha’s classroom occurred during the completion of a collaborative writing assignment. Students chose a partner and, according to the directions provided, selected a social issue and crafted a narrative that, “convey(ed) a message about that issue.” Students wrote their narratives in Google Docs.

The introduction to the assignment occurred between my class visits. The first day I witnessed students working on their narratives, partners were already chosen and stories begun. Despite the fact the assignment required partners, all but eight students worked independently. I watched as these four pairs negotiated storylines with their partners. One pair of girls worked on a story about a pregnant 13-year-old. They talked through the beginning of their plot and typed it up as I stood by. Satisfied, they asked me to read it and sat silently as I did so. I praised their creativity. They smiled at each other. One said, “We good story writers. High five!” The girls high fived and turned their attention to the next part of their story.

Why did they choose teenage pregnancy as the social issue on which their story was to focus? How familiar were they with teenage pregnancy? They didn’t mention personal experience or the experiences of friends or family when they told me about their story. Was there a connection? Should there be a connection? Why insist they choose a social issue as the focus of their creative writing?
Reading their story, I noted they wrote like they spoke. This was common as I made my way around the room and read over students’ shoulders. Grammar patterns followed students’ speech patterns rather than those of academic English. Several students used artsy fonts in large sizes. One student used bright orange letters and his entire story was typed with an underline. I suggested he remove the underline because it was hard to read. He told me he’d consider it. I noticed only one student used character dialogue in his story.

Throughout the class period, I observed students’ progress, helped troubleshoot problems with Google Docs, and prompted students who struggled with the assignment. For example, fifteen minutes into the period, I noticed one pair of boys still not working in Google Docs. Curious, I walked over and discovered they couldn’t figure out how to access the program. I gave them a quick tutorial on Google Docs and helped them set up a new document.

Soon after, I observed a boy staring blankly at an empty planning worksheet.

“What’s your story going to be about?” I asked. Based on his blank paper, I thought he would hesitate, but to my surprise, he launched into a detailed explanation of his storyline. I sat down in the chair next to his and listened. His story idea involved a father leaving his family and then returning after an absence of several years. The explanation lasted five minutes.

*Why did this student decide to write about an absent father? Again, I wondered about the personal connection to the social issue depicted in the story and whether or not it was an important part of the instructional task. Did students feel forced to tell certain types of stories for this assignment? I missed Samantha’s introduction of the task. Did it push students towards certain story lines? Did this assignment allow students to express themselves creatively or push them to recreate stereotypical narratives?*
“Hmm, you have a great story idea. Do you think you can fit it all into a short story?” He considered this for a moment and conceded it might not be possible. Together, we focused his narrative on a part of the larger story and filled in the planning worksheet. He pointed to a box on the planning sheet, “What does that mean?” His finger indicated the word “antagonist.” After a quick definition, we moved onto demystifying the word “protagonist.”

During other classroom observations, I saw the narratives in-progress shared with Samantha via Google mail accounts. Samantha told me:

I want to tell them to type it on Google Docs and show them Google Docs before they get to high school because a lot of them don't know about it and to work in a group with Google Docs is like super because they can edit each others’ work and I can look at their work and see what they're doing. And they still don't know about that so I'm excited to show them.

Despite her intentions of reading and commenting on student work through Google Docs, no evidence of this sort of communication between students and teacher was shared with me. Students did tell me that they accessed the Google Doc outside of class and marveled at their ability to work on the narratives simultaneously with their partner from different locations. “We were working on it last night,” one girl told me, “and I saw her (she indicates her partner) writing show up on my screen!”

**Research.** Martin assigned four WebQuests during this study. Samantha assigned research projects twice. In her class, students collaborated on research projects, while Martin’s students worked independently on their WebQuests.
*WebQuests.* Before leaving Hurston Middle School one morning, I sat in my car and scribbled a poem in my researcher’s journal before driving away. Several revisions later, it is below:

We wrangle with comprehension

Jim Crow was a man

“In your own words”

Faked answers

Vague answers

“In your own words”

Academic vocabulary and complete sentences

Lost references to India

“What is etiquette?”

We high five

The poem attempts to capture the experience of facilitating a WebQuest in Martin’s classroom. One of my favorite classroom experiences during the study, the WebQuest I facilitated occurred as students began reading the class novel, *Roll of Thunder Hear My Cry.*

“Can you facilitate the WebQuest today?” Martin asked as I entered his classroom one morning. “I want to check in with the other groups.”

“Sure.” I shed my jacket and stood by the group of empty desks containing open laptops and familiarized myself with the directions Martin had printed out. As students entered the room, I helped them log into the website, demystified some vocabulary, and prompted the composing of complete sentences for answers on a provided worksheet. Through the WebQuest, Martin intended to strengthen students’ understanding of the Jim Crow south, the setting of *Roll of*
"Thunder Hear My Cry." Students struggled with the vocabulary used in the WebQuest. One boy looked perplexed as he read a website giving specific examples of Jim Crow laws.

“Can you explain to me what this means?” I asked pointing to the phrase “Jim Crow” on the screen.

“Um, he was a guy?” the student shrugged. I asked the same question of another student.

“He was a black man.”

The girl next to him piped up, “I don’t get it.”

The text on the screen wasn’t difficult; however, it was full of cultural references and terms with which I doubted the students were familiar. We spent the next few minutes as a group defining and discussing Jim Crow laws. The term now understood, a girl asked, “But why are they called Jim Crow laws? Was there a guy named Jim Crow?”

“Let’s Google it,” another student responded and searched Google. “Here it is!”

“Oh, let me see!” the girl exclaimed. Soon the entire group was huddled around the laptop open to Google, reading, and discussing the answer to their question together.

Once the thrill of discovery rubbed off, I spent the rest of the group’s time at the WebQuest station insisting students write answers on their worksheet in their own words rather than copy phrases and sentences exactly from the webpages. Moving from student to student, I required they use specific examples from the online text and videos to support their responses.

The next group at the WebQuest station also struggled with the concept of Jim Crow, but I anticipated the problem and addressed it right away. Additional challenges presented themselves. For example, one website compared Jim Crow with the caste system in India. This reference was lost on students and required some explanation. Another website used the word “etiquette” and two of the students in the group didn’t understand what it meant. “Like how you
set the table,” one student volunteered. A brief discussion of etiquette among the students followed. Two students in the group shared working definitions of the word, leaving my explanations unneeded. At the end of the period, one of the students shared with me his completed worksheet. “Done!” he announced triumphantly. He gave me a high five before grabbing his books and dashing out the door towards his next class.

Three more WebQuests followed before the end of the school year and this study. All three focused on various aspects of racism and segregation in America. The second WebQuest took students through websites on the Little Rock Nine. The third focused on famous civil rights leaders, and the last taught students about Lyndon B. Johnson’s Great Society.

*Did students get WebQuest fatigue? Nearly every week, they worked on a WebQuest. While there seemed an indefinite supply of ready-made WebQuests, I wondered when students should take on the job of conducting their own research rather than clicking on pre-identified links. Should that release of responsibility occur towards the end of sixth grade? Could Martin’s students find this information without the aid of a WebQuest’s hyperlinks?*

I noticed the text complexity of websites varied from WebQuest to WebQuest, and in some cases, within the same WebQuest. For each WebQuest, students filled in a worksheet asking a range of questions from basic reading comprehension questions like “What is sharecropping?” to prompts requiring summarizing, “What happened?” Higher order questions were typically absent.

Each WebQuest included text and video as well as a worksheet with questions about the content of the websites. Martin shared that he made “some tweaks or modifications on what they had to write” for the assignments accompanying the WebQuests. When we talked after class, I asked how he selected WebQuests for instruction. Martin shared:
Generally speaking, most of them were pretty well done. I think some of them were done for graduate courses. So, like some graduate student spent a fair amount of time and did it for a grade. Some of the ones I found on Zunal, you could tell, some slapdash teacher put (them) together the night before as opposed to weeks and weeks of careful planning out. And I’ve been guilty of the first one. Don't get me wrong, sometimes you just have to get something done because you need it, but the quality control on that, you have to be very serious about because some of them are awful.

Music genre project. “Can you explain this project to me?” I approached an all-girl group in Samantha’s class that appeared intently focused on the task at hand. It was my first day observing the class and I watched as students broke into groups with the intent of working on a collaborative research project begun the week prior. The leader of the group I queried responded quickly and informed me that each group was assigned a genre of African American music. Each person in the group was responsible for writing one paragraph of a research essay about their assigned music genre. They must also create a three to five minute presentation on their genre. The group told me they were assigned Neo Soul. When I asked how they researched the genre, they pulled teacher-created directions out of their folders. The directions indicated they should start their research at http://www.carnegiehall.org/honor/history/, a website focused on the African American musical tradition. For each genre, the website provided a brief overview and an audio clip; however, the audio clips were not working when I wrote the finding of this study. Following an examination of the website, the students used Wikipedia.com and Google searches to learn more about the genre. The searches I observed occurred haphazardly. Students clicked on websites from dubious sources and copied down dubious looking information. When asked, students told me they did not really know how to conduct a Google search. Samantha confirmed
students did not receive instruction on conducting searches with Google and conceded doing so might be a good idea. Students did receive instruction on creating bibliographies with online sources for the essay component of the project.

_Is assigning a research task without first providing direct instruction on how to conduct online searches a good idea? What benefit is there from not addressing how to conduct an online search first? Was there an assumption students already knew how to conduct online searches?_

_Social media campaign._ The second research project Samantha’s students conducted occurred at the end of the school year. Students created a social media campaign for an issue of their choice. Samantha encouraged them to use research on a social issue they had conducted in social studies a short while before as a starting place. Since some research was already done, Samantha wanted students to focus on their communication and persuasion skills, “How can we express our opinion to the world? What's a good way to communicate online?”

She introduced the project with a class discussion of the uses of social media. “They went to Obama pretty fast,” she shared. They told her, “Well politicians use it to get their views out there.” and “Obama's always on my Facebook.” When I asked how the assignment went in previous years, she shared, “It’s my first time doing this particular assignment so and I’m hoping it'll be a good engaging assignment for like the last three weeks of school.”

The first time I witnessed students working on the social media campaign assignment, I arrived a few minutes late to class. A sign on the classroom door instructed students report to the second floor computer lab. After turning down the wrong hallway, one of the security guards on patrol helped me find the correct room. Samantha was standing on a chair when I entered. Her reason for standing on furniture was immediately clear. The physical layout of the room was a management nightmare. The space was large, but divided into three separate areas by cubicle-
like walls that rose about eyeball height. Standing on the chair, Samantha looked over the partitions and addressed all students in the room. On the floor, it was impossible to view all students and computer screens. Samantha explained the power outlets in their classroom still were not working, so they were meeting in the computer lab to finish research for their social media projects.

As class commenced, Samantha stood between the first two areas of the room and I strode down to the third. I expected to see students conducting research and posting information on social media sites; however, most students logged into recreational websites and commenced playing various games involving puzzles or shooting for the 50-minute period. “Are you done?” I asked a student aiming a gun in a computer game. “Yup,” he said and pushed a worksheet towards me (Figure 15).

“Is this it?” I asked.

“Yup. I’m done.”

As the image above shows, the student collected information on blood cancer. I assumed the worksheet was intended for planning the campaign and not the final product. I asked Samantha about it during our next conversation. She sighed, “The way I wound up doing it was different than the way I intended. I used much more… I directed it much more than I expected to.” She explained, “I wound up making them go through a series of worksheets.”

Did the outcome of this assignment meet Samantha’s intended goals? What was the result of completing the series of worksheets? Did students construct a plan for an online campaign?
Figure 15. Social media project worksheet.

Samantha described the challenges she faced with the project: lack of time at the end of the school year, lengthy school-required assessments, poor student attendance, and inoperable power outlets. What I observed in the lab was the extent of the project. She explained, “They didn't actually get to do the social media project. They just kind of planned it which was still good because we just didn't have a lot of time because people stop coming to school.” She also expressed concerns regarding the district’s policies around using social media sites in instruction. She called the district’s social media policies “fuzzy” and not communicated to teachers.

Samantha was not sure what was okay and what was not. Could students post on their personal Facebook pages? Was creating a class Facebook page acceptable? Ultimately, she eliminated the
online posting requirement. Instead, students filled out and handed in teacher-created worksheets.

**Reflections on modification.** When reflecting on the activities at the modification level of the SAMR Model, I am reminded of a cotton sateen leopard print dress I attempted. The pattern claimed to be “easy” and was made by a pattern company I had successfully used before. I stretched the leopard fabric across my living room floor and laid the delicate paper pieces out with an eye for pattern matching. After much fussing, I cut out the pieces out and started sewing seams. The result of several hours of labor was a dress with a V-neck so plunging, most of my bra showed. Disappointed but not defeated, I chopped off the top and turned it into a skirt.

Samantha’s experience with the social media campaign reminds of my failed dress. Despite her careful planning, the project did not take shape the way she wanted. Rather than scratch the project all together, she decided planning a social media campaign via teacher worksheets was better than nothing. When I reviewed the research comprising the grand narrative of technology use in high-minority, low-income middle schools, I did not notice any mentions of unclear usage guidelines. I was not certain of how this related to the grand narrative. Are unclear guidelines specific to this district?

At the conclusion of the project, I wondered whether Samantha’s students really planned a social media campaign. Examining a worksheet students filled in, I noticed space for recording research information, but no planning space for a social media campaign. There was no evidence students had moved beyond collecting evidence about their social issue. Could they focus more on the planning aspect of the campaign without access to the websites required of such a campaign? I was unsure.
Samantha experienced more success with the collaborative writing project. The student pairs I witnessed worked together and encouraged one another. Candice shared, “I liked working with a partner” and other students in the focus group interviews also reported enjoying the project. Although students reported enjoying the project and engagement was high, I worried about its goals and implications. Students were tasked with writing a narrative that conveyed a message about a social issue pertinent to their city. Students’ mentor text was 145th Street: Short Stories by Walter Dean Meyers (2012), a collection of stories about the people and events of 145th Street in New York City. Meyer’s stories address poverty and injustices perpetrated by the police. Students’ stories focused on teen pregnancy, absent fathers, and domestic abuse. Following the class visit during which I worked with students on their narratives, I wrote in my researcher’s journal about how the assignment made me uncomfortable. “Does this assignment serve to perpetuate stereotypes of black students?” I questioned, “Did students really feel free to select any topic they wanted?” Certainly, these were pertinent issues, but I could not shake the feeling the issues presented in students’ compositions read as forced and inauthentic. Unfortunately, the assignment’s introduction took place outside of my class visits, so I am unsure of how the assignment was conveyed to students. I wondered how Samantha’s directions and initial presentation of the assignment might have skewed students towards selecting the social issues on which most of the stories focused or if students’ selection of the issues was a reflection of the urban community in which they lived. I struggled with how my white woman’s lens might impact my perception of the assignment and students’ subsequent narratives.

Unlike the story of experience shared in the section on augmentation, Martin’s use of WebQuests described here was not impacted by the school’s firewalls. Students could access all content without using Martin’s teacher credentials. When I shared the “WebQuests” narrative
above with Martin, he expressed concern that his selection of WebQuests with texts including words and concepts unfamiliar to students might be perceived as poor instructional planning. He explained he wanted discussion around these words and concepts among students, thus purposefully left unfamiliar material in the WebQuests. Martin was successful in prompting dialogue among students regarding the terms and concepts in the WebQuest I facilitated. His decision to keep unfamiliar material in the WebQuests aligns with Martin’s goal for technology use in his classroom. He believed his role as an educator was not just to require students to use technological tools, but push them towards an understanding of how to use those tools for future academic tasks. He shared, “(if) they can keep in their bag of tools for the rest of their life, then I think that is very important.” Indeed, students reached into their toolkits when they encountered the concept of Jim Crow, Googling the phrase and learning from various websites its meaning and origin.

Samantha’s students talked about their technological toolkits in the focus group interviews. They spoke of typing up assignments using Microsoft Office products, accessing online calculators for math homework, and using Google in general when confused about a concept in class. They also told me about Schmoop.com. “You type in the name of the book (in Google) and Schmoop will pop up,” Candice explained. They described Schmoop as similar to Sparknotes, but entirely online and free. “They give you summaries on everything,” Ariel said. Candice asserted the information on the website is so good, “I don't have to read the book.” I doubted the creators of Schmoop indented to replace the reading of books, but the students’ use of this tool and the aforementioned suggests they are filling the technological toolkits Martin describes.
Redefinition. Redefinition is the most transformative level of the SAMR Model. At this level, the task cannot exist without technology. Only one task observed in the classrooms is at this level of the model, the use of iReady. An adaptive online program described earlier in the chapter, iReady was utilized by both Samantha and Martin. iReady was available to all students in the school and administration urged its regular use in ELA classes.

In Martin’s classroom, students used iReady in one of the station rotations during class. Throughout the course of the study, I watched students move through grammar, vocabulary, and reading comprehension modules in the program. Brightly colored with perky and racially diverse cartoon character guides, students moved steadily through the program all semester. Because the program was adaptive, when I looked at students’ computer screens, each one showed something different. In the same rotation, it was normal for each student to work through a different module and on a different skill than his or her peers. While differentiating instruction is in the purview of teachers, the in-the-moment adaptation of instruction and practice provided by the program was more intensive than what a classroom teacher could provide on a regular basis. Teachers could access a user interface showing student progress and flagging skills not yet mastered. I asked Martin how often he used this information for planning instruction. He was candid, “It’s not serving that purpose as of right now. The data points that I'm looking, that are informing my instruction, are the unit tests more than anything else.” He did monitor pass rates and diagnostic scores, but these did not influence his planning or instruction.

If the data generated by iReady isn’t used to drive instruction, is using the program a good use of students’ time? Is there another source of data providing more pertinent and timely information?
Samantha’s students used iReady in class only occasionally, using it instead as a homework assignment. She assigned iReady modules for homework each week. Many students arrived in Samantha’s classroom during lunchtime on Thursdays to finish the assignment due on Friday. Like Martin, Samantha did not use data from iReady to shape instruction, but the administered the program’s diagnostic as a final exam for students. Samantha explained the diagnostic assessed all the skills she taught in class throughout the year and was a good measure of students’ skill mastery.

I observed in the classroom when students took the diagnostic as a final exam. They sat in rows with laptops and worked through the diagnostic the entire period. Students wore headphones so they could hear the audio in the iReady program, but many opened browser windows for streaming music sites. Throughout the period, students stared blankly into space, whispered to neighbors, and put their heads down. I noticed one girl nodding her head in time to a beat. The iReady screen on her computer was in sleep mode. A white box on the screen displayed, “Are you there (student’s name)?” At the end of the period, she closed the window without resuming the test.

**Reflections on redefinition.** Throughout the course of the study, I thought quite a bit about the use of iReady in the ELA classes. Initially, I worried the brightly colored screen and trying-too-hard-to-be-cool characters too childish for Samantha’s eighth grade students, but when I asked about the program during a focus group conversation, three of the students asserted they liked the program. I was surprised by their positive attitude towards the program, especially after witnessing disengagement in Samantha’s class while it was in use. They identified the games students could play after successfully completing modules as their favorite part.
Three students expressed dislike of iReady and one student, Ariel seemed neutral. Gina and Candice were especially critical of the program. “iReady is dumb,” Gina said. Candice seconded, “I don't’ like the reading stuff.” The students engaged in the following animated exchange when describing the program:

Tatyana: And they (animated character guides) are always talking. I understand that we have to read, but they are always talking.

Ariel: They have conversations.

Tatyana: They’re like, “Jan, do you like iguanas?”

Gina: They have conversations. It was like “Do you know the meaning of this word?” And I know the meaning. I’m trying to press this. (Mimed pressing a key) “So this word is confusing. When you are confused, how do you feel?” Excuse me, I know what the word means, can I please press it? You can’t answer while they’re talking. Sometimes the conversation is like three minutes long non-stop and you can’t press the answer.

Programs like iReady, that focus on skill drills are used more often by high-minority, low-income schools than more those serving more affluent students (Attewell, 2001; Banister & Reinhart, 2011; Boser, 2013). In this case, I wondered about the appropriateness of the program for eighth-grade students. In particular, Gina’s exasperation over knowing the answer, but inability to move more quickly through the program suggests iReady may not be challenging her abilities and moving her learning forward.

I also mulled over how I guessed the school intended the program to be used and how the teachers used it. I assumed the school wanted the data collected through the program on students reading levels and vocabulary and grammar skills to inform instruction. Instead of using the data collected by the program to inform instruction, iReady served as an easy rotation or homework
assignment. It required no teacher planning and offered quality individualized instruction. Next to notes on iReady, I scribbled “missed opportunity” in my researcher’s journal. How might instruction look different if the data informed instructional decisions?

**Identification and Exploration of Threads**

Wondering around the Museum of Women in the Arts one morning with some girlfriends, I snapped a photo of the woven installation piece, *Lekythos* by Lenore Tawney (1962). The artwork can be viewed online here: [http://lenoretawney.org/work/lekythos/](http://lenoretawney.org/work/lekythos/). Made of linen fibers, the wall hanging was my favorite piece in the exhibit of modern female artists housed on the museum’s top floor. I do not normally take photos of art in museums, but I made an exception for this work. Back at home later that day and working on my data analysis for this study, my mind kept wandering back to *Lekythos*. As I pondered my attraction to the work, I also wondered: How do the stories of Martin and Samantha reaffirm and echo one another? What threads weave through the stories of experience of both teachers? I realized *Lekythos* is a physical representation of the stories of Martin and Samantha.

Like the threads in the artwork, some of the stories of experience in the two classrooms are unique. They hang alone and unencumbered by neighboring threads. Other threads come together in the center of the piece and are woven into a pattern. In this study, some stories or elements of stories were shared by teacher participants. A pattern of experience existed between the two classrooms.

I started by listening and re-listening to the recorded conversations in which the participants and I engaged. I read and reread the transcripts from these conversations. I also read and reread my observation notes and viewed and reviewed the photos I took during my classroom visits. I also reconsidered my interim texts, looking for commonalities in my
understandings and impressions of the narratives of experience. As I listened, read, viewed, and considered, I noted all commonalities in content across narratives. I kept track of these commonalities, or threads, in a running list. Through this constant reconsidering of the data, I identified six threads (Figure 16) connecting Martin and Samantha’s narratives of experience. I share these threads below. As mentioned previously in the chapter, the threads below include data that did not fit into the SAMR Model: the physical state in which laptops were returned from state-mandated testing, challenges with vandalism of technology, and students’ technological skill deficits.

**Figure 16.** Threads identified across the narratives of Samantha and Martin

**Technology increases engagement.** Throughout the study, I noted in my observation notes the level of engagement in each class based. I did this by noting how many students worked on assigned tasks verses listening to music, watching videos, talking about nonacademic subjects with neighbors, etc. Samantha mentioned technology’s power to keep students engaged in class on several occasions. During one conversation, she shared, “Um, they also have short attention spans, so it (technology) helps to keep things interesting.” She was right. Class periods with the highest engagement occurred when students used technology for a research or writing task. WebQuests elicited the most focus from Martin’s students while collaboratively writing narratives engaged all of Samantha’s students.
Technology is a distraction. Employing an old cliché, this thread and the one above are two sides of the same coin. At times, the use of technology resulted in high student engagement. At others, it was a distractor that prevented academic work from occurring. Explored in the substitution level of the SAMR Model, students in both classes engaged in off-task behaviors when using technology.

Technology makes teaching easier. Woven into the narratives of both Martin and Samantha is the idea that technological tools make teaching easier. Although both teachers used technology to ease their workload, only Samantha talked directly about using technology this way. “It makes it easy as a teacher,” Samantha shared, “You can, you can use like iReady to differentiate or you can use um, things that allow you to grade easier.” Both teachers used programs that graded student work, EnGrade and Socrative. These programs automatically graded multiple-choice and true/false quizzes created by the teacher. Students immediately received their score upon completion of the quiz and, in the case of EnGrade, the quiz grade was automatically entered into the teacher’s electronic grade book, saving time normally spent on hand-grading student responses. Instructional activities in which technology made life easier for the teacher are spread throughout the SAMR Model levels; however, they were most concentrated in activities at the lower levels of the model.

Found at the most transformative level of the SAMR Model, iReady was utilized in both classrooms. iReady was the sole source of instructional differentiation I observed during the study. Individualizing instruction is time consuming and difficult for even the most masterful teacher, and the iReady program took on this task for teachers. Instead of spending hours modifying instruction based on students’ needs, Martin and Samantha relied on iReady to address students’ skill gaps.
Institutional barriers hinder technology use. Restrictive internet security settings, a lack of guidelines delineating acceptable internet use, and the removal of technology for testing comprised the institutional barriers facing Martin and Samantha. Hurston’s firewalls blocked Martin’s students from accessing content central to instruction, YouTube video clips. Martin felt giving students access to the media through his teacher credentials worth the hassle. Reflecting on his work-around of the firewall, Martin shared that he dreamed of a day when students could access anything, anytime, “I think that it would be super cool if there were absolutely no barriers.”

While Martin wanted unrestricted access for students, Samantha worried about the repercussions of unfettered use. When teaching in another district, Samantha ran into strict rules about internet use and safety. Before using the online tools with her students at Hurston, she sought clarity around acceptable usage according to district guidelines, but found none. A lack of clarity around security measures made Samantha shy away from her initial plans for student-created social media campaigns. When she could not find information on the district’s social media student use guidelines, she decided not to risk making a mistake that could negatively impact her job.

The final institutional barrier, a loss of computer access during testing, affected both Martin and Samantha. Although the school notified teachers prior to the removal of their laptop carts for each test, the loss of technological tools for extended periods of time was a hardship. Samantha expressed frustration:

So it makes it difficult because it happens for this test and all the other tests too because we just finished unit testing. The unit testing takes a week and then there is make-up so that takes a week. So that's frustrating.
Without their computer carts, teachers taught technology-free lessons or scheduled time in one of the school’s two computer labs. The amount of instruction occurring with technology during testing times was greatly diminished.

**Physical barriers hinder technology use.** Martin and Samantha both encountered physical barriers to technology use with their students. Physical barriers included disorganized laptop carts returned from testing, a poorly designed computer lab, and student vandalism of technological resources. Like the institutional barriers described above, these physical barriers negatively impacted technology use in Martin and Samantha’s classrooms.

For both teachers, the state of the laptop carts when returned following testing was problematic. I received the following image in a text message from Martin early one morning:

![Back of laptop cart.](image)

*Figure 17.* Back of laptop cart.

This is a picture of the back of Martin’s laptop cart after it was returned from state-mandated testing. Power cords are a mess, tangled and falling from the back of the cart. Untangling the
cords took Martin and two students, who he paid in hot chocolate, 45 minutes. When I asked why the tangled cords were problematic, Martin explained that each laptop cord was attached to a power adaptor. These are the black blocks in the image above. The adaptors are heavy and, when tangled, easily topple off the shelves as students pull out and return laptops to the cart. The cords connecting the adaptors to the power strip, two strips located at in the back of the cart, are short. When an adaptor falls, its weight, combined with the short cord, result in the plug popping out of the socket. Martin shared, “You might have the computer plugged in but it's not charging.” This caused disruptions during instruction as laptops students thought were charged wouldn’t turn on or died mid-way through the class period. Martin complained, “It just made for a lot of wasted time and a lot of like tech-support as opposed to helping kids with what they were doing… it was more annoying than anything else.” Coiling the cords and adaptor neatly on each individual shelf alleviated this problem, reducing the chance adaptors would be yanked and fall as students borrowed and returned computers.

Samantha also reported this problem when her computer cart was returned from testing. She, too, enlisted student help in organizing the cords. She compared the laptop cart to a cart for MacBooks, “The cords are a disaster. That is the functionally worst cart ever because… It's terrible the way they have the cords. They need to be like the Mac carts because there's something that guides the cords to the right place and then you can just plug it up and you don't have to pull them out.” I snapped the image below after Samantha’s cart was returned from a testing cycle. She was in the process for reorganizing the power cords. The white cart in the photo contains MacBooks and the cord guides Samantha mentions are visible.
It took a few rounds of testing before Martin and Samantha realized how the cords impacted the charging of the laptops. Once they recognized the problem the tangled cords caused, unraveling the cords took a substantial amount of time, and in Martin’s case, hot chocolate.

When laptops were unavailable, teachers scheduled class time in the computer lab. As described in the section on modification, the second floor computer lab was poorly constructed for instruction with partial walls dividing the space into three parts. Martin avoided using the space because of its physical layout while Samantha made do. She even saw an upside to the poor design, “Most people don't use them (computer labs), so I can kind of use the lab whenever I want.”

Both teachers also discussed challenges with student vandalism of technology. Midway through the study, Martin arrived one morning and found the key that locked the computer cart in his classroom broken off and stuck in the cart’s keyhole. He suspected students using the cart in an afterschool program that used his classrooms for meetings allowed students access to the laptops in Martin’s cart at fault. The broken key meant the laptops were stuck in the cart and unusable by students. Martin sighed, “You can't just wiggle it out. You're gonna need pliers and
yank it.” It took a few days for maintenance at the school to remove the broken key from the cart, enabling renewed access to the laptops contained inside.

A problem both teachers faced was students prying the keys off of computer keyboards. In Martin’s class, students in the afterschool program pulled off the keys. When Martin arrived the next morning, several laptop keyboards were missing keys. The keyboards were not usable without the keys and repairing them took a week. Martin guessed the repairs cost the school $50 a laptop.

The eighth-grade teachers Samantha worked with also experienced problems with students pulling keys off of laptop keyboards. Using funds from the Parent and Teacher Association, they purchased silicone keyboard covers for all the laptops used by students. Brightly colored and inexpensive, the keyboard covers discouraged students from pulling the keys off of the keyboards. Samantha explained the psychology behind the silicone covers:

So the kids have a tendency with those Macs to pluck the keys out and once one (key) is gone, literally in a week all of them are gone. I don't know why, but it just gives one extra layer… because it's kind of hard to keep an eye on everything that's happening when you're conducting small groups. But with that (keyboard cover), there's like only one reason why it could be up.

The vandalism experienced by Martin and Samantha was an annoyance and expense that impacted the amount of technological resources available for instruction. Like the state of technology returned from testing, student vandalism of technology is also not addressed in any current research or literature; however, I believe this problem is not exclusive to Hurston Middle School. In visits to other schools and in my present school building, I have seen similar acts of vandalism impact computer use. I found no data supporting the destruction of technology by
students is mostly, if at all, intentional. For example, Samantha suggested the picking off of keys from laptop keyboards was more of an unconscious nervous habit than intentionally malicious behavior. She described the silicone covers as a “distraction” from picking at the keys.

**Knowledge and skill barriers hinder technology use.** Martin and Samantha spoke of their students’ knowledge and skill limitations with technology in several of our conversations during the study. Specifically, they worried students could not type or use word processing programs. Martin joked, “If they can type like 20 words a minute, they’re smoking!” Samantha mentioned that most of her students typed slowly with two fingers. During student focus group interviews, all but one of the students interviewed confirmed they did not know how to type. The student who could type had taken a typing course in elementary school.

Students in Martin’s class received explicit instruction in typing through two online programs. The school purchased the first, Typing Agent, an online program that teaches students how to type. The second program, Nitro Type, was free. The program did not teach typing, but provided typing practice through a racing game. I observed students practicing on Nitro Type during two class periods towards the end of the year. Students logged into the program and selected a racecar to represent them on the game’s racetrack. Cars moved along the track based on the player’s typing speed. Martin’s students played the game after completing WebQuests and iReady lessons. It was a very popular activity students viewed as a reward for completing assignments. Through Typing Agent and Nitro Type, Martin’s students practiced hand positions at the keyboard and worked on increasing their typing speed. Despite Martin’s attempts at instruction, I observed students using one or two fingers to slowly type while using Nitro Type during one of the year’s final class periods. Based on my observations, use of the typing programs didn’t appear to impact student typing skill.
Samantha’s students received explicit instruction on Google Docs. She required students use the program when typing their narratives. Her how-to instruction was delivered at a time when I was not observing the class. She assured me she walked students through the program before they began the assignment; however, my class visits during the completion of the project made it clear some students still did not understand how to use the program. Based on conversations in class with students, I deduced many understood that the program enables multiple people to work on one document simultaneously. What was not clear is if students understood how the comment feature worked. No student reported interacting with his or her partner or the teacher through this feature.

Martin and Samantha also expressed concerns that students did not fully understand the internet as a concept and failed to see its connection to their future lives. Martin shared that many of his students could not conceptualize the internet. He shared an instance that occurred outside of my observations, “(Student name) comes up to me because he’s not typing in the tiny URL right. So he comes up to me and goes, “Mr. Martin, every time I type in the website, I run out of internet.” The student didn’t understand the problem was how he was typing in the address and not a result of the internet’s limitations. Similarly, Samantha explained students did not view phone applications as part of the internet. “They don’t understand that Instagram is the internet,” she explained.

In focus group interviews, students all agreed technology was important, but could not articulate why learning with technology was important. All but one did not think technological skills would help in a future career. Again, students were unable to expand upon their answers. This inability to conceptualize existence without technology might be the cause of students’
inability to respond to my questions. For them, conceiving of a world without technology is alien and impossible.

**Chapter Conclusion**

In this chapter, I shared and analyzed the data collected during this inquiry. First, I described the inquiry space. Then, I shared chronologies of participants’ technology use for instruction. I organized the chapter according to the SAMR Model and narrated and examined stories of experience from Martin and Samantha’s classrooms. An exploration of threads identified across stories concluded the chapter. In the coming chapter I revisit the research puzzle and theoretical framework by reconsidering and extending the threads shared here.
Chapter Five: Rethinking and Extending the Threads

Overview of the Chapter

When I learned to write essays in high school, a teacher taught me that the conclusion was a restatement of the introduction. As a result, I spent large amounts of time searching the thesaurus for synonyms of words used in my introductory paragraph. With the thesaurus’s help, I rewrote my introductory paragraphs at the end of my essays. Terrible conclusions added nothing to the content of my papers. As an adult writer, I still struggle with conclusions. Although I left the thesaurus on the shelf, my first attempts at this chapter resulted in stilted, miserable reads.

Because of my intimacy with the data, I struggled stepping back for a holistic view. As Amy Poehle states in her memoir, Yes Please, (2014), “My nose is still pressed up against the painting and I have little perspective” (p. 169). In the midst of kvetching to my husband and friends (“Urgh! I’ve said it all already!”), I reread parts of Clandinin and Connelly’s (2000) seminal text on narrative inquiry cited throughout this dissertation. The authors reminded me of the importance of socially and theoretically positioning the inquiry. The proverbial light bulb flickered on and I knew I had more to say after all.

In chapter two, I discussed three theoretical frameworks underpinning this study: CRT (Delpit, 1994, 1995; Gray, 2000; Irvine, 2002; 2003; Ladson-Billings, 2006), digital literacy (Gilster, 1997; Knobel & Lankshear, 2006; Martin, 2008), and stage-environment fit theory (Eccles & Midgely, 1989; Eccles, et al., 1993; Eccles & Roeser, 2011). I suggested that together, these frameworks would help me examine narratives, paying special attention to students’ home
cultures (CRT), the teaching of skills needed for students to grow into successful adults in a digital world (digital literacy), and connections between students’ digital lives inside and outside of the classroom (stage-environment fit). In this chapter, I step back from the inquiry and share extensions and reconsiderations of the threads. I situate these in relation to the theoretical framework and existing literature. I provide suggestions for further research. The chapter concludes with my final reflections on this inquiry journey.

Research Puzzle

Repeated at the start of every chapter, the research puzzle served as a compass throughout the planning, data collection, and analysis of this study. When events in the classroom threatened to pull my attention in a dozen different directions, the research puzzle kept me focused and prevented me from feeling overwhelmed by the data I was experiencing and collecting. The research puzzle is again stated below:

What might I learn about teaching with technology from two middle school ELA teachers utilizing technology in a high-minority, low-income school? In what ways might participants’ stories mirror or differ from the grand narrative of technology use in high-minority, low-income middle schools? In what ways might this inquiry expand general knowledge of technology use in high-minority, low-income, middle-level classrooms? I pull the puzzle apart and deliberate over each piece. Have I found the answers I sought? Were they what I expected? What happens next?
Rethinking and Extending the Threads

As I reflected on all I experienced in Martin and Samantha’s classrooms, my thoughts tumbled down the page in a free verse poem:

I learned…

The internet is a mystery.

Hands conceal Earbud wires.

YouTube is hypnotic.

Instagram is cool.

iReady games are fun.

Deficits are a concern.

Collaboration is a goal but,

digital literacy is a work in-progress.

Twenty words-a-minute is fast.

Word processing is hard.

Tangled wires prevent computers from charging.

Keys pop off laptops.

Chairs in computer labs are for standing.

Internet security is tight but,

policies are murky.
Teaching with technology is easy.

Online quizzes are easy.

WebQuests are easy.

Power Point lectures are easy.

There is a lot of data.

How do we use the data?

Which data?

Is there too much data?

Testing trumps all.

This poem launched my reconsideration of the narratives and threads shared in chapter four. I looked for conclusions, big ideas that could inform practice and further research, satisfying my justifications of the study and answering the calls for study I delineated in chapter one. This examination brought me straight back to the threads. I found no new conclusions; rather I discovered extensions and wonderings springing from the threads. After some debate, I scrapped the term “conclusions.” It felt too hard and final. Instead, I decided on more tentative terminology: extending and reconsidering the threads.
### Threads

<table>
<thead>
<tr>
<th>Threads</th>
<th>Extending the Threads</th>
<th>Reconsidering the Threads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology increases engagement.</td>
<td>Adolescents use technology for recreation, but teachers require its use for academic purposes.</td>
<td>Can educators bridge the divide between recreational and academic uses of technology?</td>
</tr>
<tr>
<td>Technology is a distraction.</td>
<td>Instructional tasks are personalized and made authentic through technology.</td>
<td>Are the results of individualized and authentic tasks through technology meeting their potential?</td>
</tr>
<tr>
<td>Technology makes teaching easier.</td>
<td>Teachers are committed to incorporating technology into instruction.</td>
<td>How can districts and schools better support teachers using technology?</td>
</tr>
<tr>
<td>Institutional barriers hinder technology use.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical barriers hinder technology use.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limited student skill and knowledge hinder technology use.</td>
<td></td>
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</tr>
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**Figure 19.** Extending and reconsidering the threads from the narratives of Martin and Samantha.

Figure 19 above lists the threads, identifies extensions to the threads, and suggests questions for consideration specific to each thread or collection of threads. By exploring the aspects outlined in the figure below, I fill gaps in existing literature, expand our understanding of technology use in high-minority, low-income middle level ELA classrooms, and generate new wonderings meriting future examination.

**Technology increases engagement and is a distraction.** This section combines two threads identified in chapter four, technology increases engagement and technology is a distraction. Although technology sometimes facilitated an engaged and energized learning environment in Martin and Samantha’s classes, just as often it did not. Distracted by technology, students ignored academic tasks. As I rethought and extended the threads, I wondered if the difference between engagement and distraction rested not in *if* technology was used, but *how* it was used. Students’ focus on recreational uses of technology (i.e. listening to music, watching
videos, texting) clashed with their teachers’ focus on academic uses of technology (i.e. word processing, assessments, research). Because of this mismatch I reconsidered the role of stage-environment fit theory, part of the theoretical framework for this inquiry (Eccles & Midgely, 1989; Eccles, et al., 1993, Eccles & Roeser, 2011). Ultimately, I queried, can educators bridge the divide between recreational and academic uses of technology?

Martin and Samantha talked about the fact adolescents learn best with technological tools (Downes & Bishop, 2012; Fitton, et al., 2013; Hur & Oh, 2012) and use technology more heavily than any other age group (Rideout et al., 2010). By sharing that she used friends’ phones and laptops to access social media websites, one of Samantha’s students reminded me of research by Ahn (2011) who found low-income adolescents’ find ways to use technology and engage with peers online even when they do not have direct access. Through incorporating technology into their curriculum, Martin and Samantha hoped to capitalize on their students’ proclivity towards technology. In many instances, utilizing technology in their classes resulted in high student engagement, consistent with existing research on technology use in schools (Downes & Bishop, 2012; Hur & Oh, 2012) but, in many others students exhibited distracted behaviors.

Listening to music, watching videos, and messaging friends encompassed the off-task behaviors I observed in their classes. Current research does not address student off-task behaviors with technological tools; however, students’ use of technology for recreational purposes (e.g. watching videos, listening to music, and looking up basketball information) is aligned with students’ uses of technology outside of school that focus on recreation (Ahn, 2011; Fitton et al., 2013; Moje et al. 2008). In class, Martin and Samantha tasked students with academic uses of technology including reading books, answering reading comprehension questions, taking quizzes, and completing iReady modules. Distracted students listened to music,
watched videos, and texted their friends—recreational uses of technology in which they engage outside of school (Ahn, 2011; Fitton et al., 2013; Moje et al. 2008). Rereading my data, I considered again why some tasks with technology resulted in distracted students and others did not. When I looked again at observations during which I noted in my researcher journal high engagement, I found distractions minimized when teachers used a recreational activity like a game in instruction or met students’ developmental needs for autonomy and collaboration (Deci & Ryan, 1985, 2000; Eccles 2012; Eccles et al., 1993). Interestingly, I also noted student engagement increased as activities fell into more transformative levels of the SAMR Model.

Both teachers incorporated technology into their instruction with a view towards satisfying students’ needs. They believed using technology in instruction gave students greater autonomy and allowed for increased collaboration compared with more traditional teaching methods. By assigning tasks that called for autonomy and collaboration, Martin and Samantha provided students opportunities to meet their developmental needs in the classroom (Deci & Ryan, 1985, 2000; Eccles et al., 1993), a key concern of stage-environment fit theory (Eccles & Midgely, 1989; Eccles et al., 1993; Eccles & Roeser, 2011).

For example, the collaborative narrative Samantha assigned students produced an entire classroom of focused learners composing and discussing their narratives. I believe the success of this assignment a result of meeting students needs through the academic task. As mentioned in chapter four, I did not observe a single student listening to music, watching a video, texting friends, or engaging in any other distracted behavior. Students’ actions during the task exemplified the definition of collaboration given in chapter two: the ability to demonstrate flexibility, assume shared responsibility for tasks, and interact respectfully with diverse individuals and teams (Partnership for 21st Century Skills, 2009; NEA, 2012). The high levels of
engagement in the narrative writing task reflected research that suggest collaborative tasks result in high levels of student motivation (Demirtas, 2005, Grisham and Wolsey 2006). In ELA classes, collaborative writing using technology is one of the more studied areas of technology integration (Beaufort, 2000; Bledsoe, 2009; Grabill & Hicks, 2005; NWP, 2010).

The collaboration in which students engaged required communication, a common recreational use of technology by adolescents (Ahn, 2011; Fitton et al., 2013; Moje et al. 2008). By requiring students write together, Samantha also facilitated the practice of a 21st century skill essential to digital literacy, collaboration (Assessment and Teaching of 21st Century Skills, 2008; ASCD, 2008; NEA, 2012; P21, 2011; West, 2012). The pairs of students I observed engaged in productive collaboration reflected increases in peer support found by Ruthven et al., (2004) when students collaborate using technological tools. Like Samantha, Martin used collaborative structures during WebQuests. Described in chapter four, students sat in a circle and helped one another through WebQuests on laptops. Participating in a collaborative writing activity may also have strengthened relationships with peers, meeting a basic psychological need for relatedness (Deci & Ryan, 1985, 2000), and satisfying stage-environment fit (Eccles & Midgely, 1989; Eccles et al., 1993; Eccles & Roeser, 2011).

The collaborative writing project in Samantha’s class mirrored positive aspects of the grand narrative of technology use in ELA classes. The project reflected the grand narrative because technology was used for a collaborative writing assignment, a common use of technology in ELA classes (Lowther, Ross, & Morrison, 2003; Silvernail & Gritter, 2007). It also mirrored scholarship that identifies applications such as Google Docs with facilitating easy writing collaboration among students (Beaufort, 2000; Bledsoe, 2009; Grabill & Hicks, 2005;
NWP, 2010). Her experience differed from the grand narrative in one important way. Research suggests students in low-income schools rarely collaborate online (Reich et al. (2012).

Martin capitalized on students’ recreational uses of technology by requiring students practice typing on Nitro Type, the online typing game described in chapter four. Racing cars around a virtual track by typing simple sentences into the computer facilitated typing practice and kept students engaged even after the dismissal bell. Students’ affinity with the game is not surprising when considering the literature on adolescent black males that suggests they are the biggest consumers of technology (Rideout, et al., 2010). It should be noted that although practicing on Nitro Type engaged students, it did not appear to improve student typing as mentioned in chapter four.

These threads extend my present understanding of technology use in the classroom by shedding light on how teachers may provide students opportunities to satisfy their developmental needs through assignments utilizing technology (Eccles & Midgely, 1989; Eccles et al., 1993; Eccles & Roeser, 2011). Furthermore, as illustrated by the collaborative narrative writing project in Samantha’s class and the use of Nitro Type in Martin’s class, connecting recreational uses of technology to academic uses of technology may bridge the divide between outside of school and inside of school uses of technology.

**Technology makes teaching easier.** Throughout data collection, I noted that technology made Martin and Samantha’s jobs as teachers easier. In some instances, technology managed information. Automatically grading quizzes and online grade books lessened the amount of time Martin and Samantha spent grading materials and facilitated the sharing of performance data with students. At other times, ready-made WebQuests, and iReady lessons presented at students’ individual skill levels saved Martin and Samantha time and effort creating differentiated lesson
plans. Technology also supported traditional instructional practices falling mostly in the substitution level of the SAMR Model. These activities included playing the audio of a novel, displaying lecture notes on a Smart Board, and sharing comprehension questions online. These uses echoing the findings of Cuban (2001) and Applebee and Langer (2013) all of whom discovered technological tools regularly facilitate traditional instructional practices. Martin and Samantha engaged students in authentic learning tasks such as the social media project in which students’ audience could extend beyond the teacher through the use of technology. Finally, I found technology presented teachers with an abundance of information about student performance through continuous online assessments, specifically iReady, a potential boon for tailoring instruction to individual student’s needs.

As I reviewed this listing of how technology made teachers’ lives easier, I noted particularly the power of technology to personalized instruction and make it authentic. I remembered the challenge of creating differentiated lessons and the struggle to make assignments authentic. Technology helps teachers accomplish these tough goals, but, reading through the narratives in chapter four, I felt my excitement over this fact diminish. After examining participants’ stories of technology use holistically as called for by Kerr (1991), I doubted whether the results of individualized and authentic tasks through technology met their potential. I found three instances where using technology in instruction failed to achieve the desired results. The use of WebQuests in Martin’s classroom, the assignment of a social media campaign in Samantha’s classroom, and the use of iReady by both teachers comprise these instances.

Martin heavily used WebQuests in his ELA class. He shared with me his intention to leave difficult texts and unfamiliar terminology in WebQuests. He felt they encouraged
discussion among students, a desirable outcome. While I understood his intention of pushing students towards intellectual independence, an avenue for meeting students’ developmental needs ((Eccles & Midgely, 1989; Eccles, et al., 1993, Eccles & Roeser, 2011), I worried the material was too advanced to demystify during a brief discussion. As stated in chapter four, I noted in my researcher’s journal that texts seemed several reading levels above students’ independent reading levels. Helping students access the texts often required substantial support from the teacher or me. Was Martin’s goal of dialogue about difficult content always achieved? Was it always appropriate? Utilizing pre-made WebQuests was easy, but I worried they were not always a good match with students’ ability levels.

When I reviewed the literature to consider how Martin’s use of WebQuests fits in relation to the grand narrative, I found it in opposition to the grand narrative of technology use in high-minority, low-income middle schools. Student-centered activities and questions on WebQuests required critical thinking, one of the 4Cs of digital literacy (Assessment and Teaching of 21st Century Skills, 2008; ASCD, 2008; NEA, 2012; P21, 2011; West, 2012). Martin’s use of WebQuests is in direct opposition to research on schools like Hurston suggesting instruction using technology consists of kill-and-drill software programs or online activities that support teacher-centered instructional practices (Attewell, 2001; Banister & Reinhart, 2011; Becker, 2000; Boser, 2013; Cuban, 2001; Judge et al., 2004; Warschauer et al., 2004). This opposition to the grand narrative is exciting until I consider the fact students may not have been able to comprehend the texts in the WebQuests. Student-centered instruction that focuses on critical thinking is wonderful only if students are able to understand the instructional materials.

The social media campaign project in Samantha’s classroom was another instance in which the teacher’s intentions and the reality of the project did not align. Similar to Martin’s
WebQuests, Samantha’s plans for the social media campaign project should have resulted in a student-centered assignment requiring critical thinking. In these ways, it too went against the grand narrative (Attewell, 2001; Banister & Reinhart, 2011; Becker, 2000; Boser, 2013; Cuban, 2001; Judge et al., 2004; Warschauer et al., 2004). Unfortunately, the project was not executed the way Samantha planned. A lack of clarity around the district’s internet usage guidelines prevented her from allowing student use of social media sites. Instead of conducting a social media campaign, students filled in worksheets with research on their topics. The grand narrative of internet use in low-income schools is characterized by strict firewalls and slow internet speeds (O’Dwyer et al., 2005; Purcell et al., 2013; Warschauer & Matuchniak, 2010), but no research addresses issues concerning unclear district guidelines. This inquiry expands the literature by identifying unclear internet usage guidelines as a potential area of inquiry for future studies. Is this problem unique to Hurston’s school district? Does it affect other middle-level teachers’ instructional plans in similar ways?

The final instance in which using technology in instruction failed to its potential occurred with the use of iReady in both Martin and Samantha’s classrooms. While the teachers used iReady in instruction, for homework, and for assessments, inclusion of the program into instruction wasn’t entirely voluntary. The administrative team at Hurston, who chose to purchase the product and utilize it in all ELA classes, expected its regular use. The ability of the program to adapt instruction to students’ skill needs and to report a steady stream of student performance data to teachers likely comprised the reasons Hurston selected the program. Assuming these were the intentions, they were only partially met. The program did present students with modules focused at different levels based on diagnostic data, but students in Samantha’s class complained the program made them move too slowly through the modules and the character guides talked
too much. Related to these student complaints, my observations made me wonder if the program’s user interface might be too childish for students in eighth grade. The bright primary colors of the user interface and simple language used by the character guides struck me as too childish for eighth grade students. The use of iReady as a remediation tool utilizing skill and drill online modules in ELA classrooms reflects the grand narrative of technology use in high-minority, low-income schools (Cuban, 2001; Attewell, 2001; Banister & Reinhart, 2011; Boser, 2013).

Discussed previously in chapter four, neither Martin nor Samantha used the data produced by iReady to inform instruction. In chapter four, I wrote critically of this failure, but upon further reflection, I think differently. I thought about the fact teachers received a lot of data. They were confronted with data from the state-mandated test, district-mandated unit tests, SRI, and iReady. This mountain of data does not take into consideration any teacher-created formative and summative assessments related to discrete skills and concepts taught in the course. The deluge of data teachers likely produced an information overload. The grand narrative suggests high-minority, low-income schools conduct more testing than more affluent schools, and Hurston was not an exception (Kozol, 2005). With all this information, it is not surprising Samantha and Martin privileged some data sources over others. Using all of it to inform instruction might prove impossible. I also saw no evidence of teacher professional development or support around using these tools or the data they collected. This is consistent with research suggesting technology is typically purchased and implemented without teacher supports (Boser, 2013; NCES, 2002; Ringstaff & Kelley, 2002). The examination of this thread underscores the importance of teacher professional development on technological tools, specifically on utilizing
the data they produce for planning instruction. Looking at how teachers successfully plan using copious amounts of data is a potential area for future research.

**Barriers negatively impact technology use.** Throughout this inquiry, Martin and Samantha experienced barriers to technology use typical at high-minority, low-income schools. They dealt with institutional and physical barriers to technology as well as deficits in students’ skill and understanding. Together, these barriers negatively impacted technology use in instruction, making teaching with technology impossible at some points in this inquiry and difficult at others. Despite these challenges, Martin and Samantha committed to incorporating technology into their ELA classes. Reconsidering their experiences made me question how districts and schools can better support teachers using technology.

The narratives of Martin and Samantha echo the grand narrative in which institutional barriers impact technology use. Strict firewall settings at Hurston prevented Martin from easily using YouTube in instruction and are typical of low-income schools (O’Dwyer et al., 2005; Purcell et al., 2013; Warschauer & Matuchniak, 2010). According to the grand narrative, institutional barriers prevent teachers from meaningfully integrating technology into their classrooms in purposeful ways (Purcell et al., 2013). Martin’s story moves against the grand narrative because he persisted and identified a work-around for student access. By logging students into laptops using his teacher credentials, Martin does as Aronson and Laughter (2016) suggest and creatively breaks the rules. He shared his belief that districts and schools allow unfettered access to technology by students. His feelings reflect those of students surveyed in recent research who want unrestricted internet access in school (Spires et al., 2008). Martin’s story adds to our knowledge by illustrating how firewalls negatively impact access to web content capable of enhancing instruction.
Physical barriers also presented problems. The computer lab’s physical layout was problematic for Samantha when her power outlets died and students needed computers to finish their social media campaigns. Partial walls within the lab divided the space, making instruction difficult. With an ongoing renovation project at the school, I found it surprising the school did not reconfigure the lab; rather its layout remained awkward for instruction mirroring concerns that computer labs are not created with ease of instruction in mind (Becker, 1998, 2000).

Even more problematic, mandated testing removed technology from both classrooms for three weeks. In schools like Hurston, students are tested more frequently and broadly than in middle-class and affluent schools (Kozol, 2005; O’Dwyer et al., 2005; Purcell et al., 2013; Ruecher, 2012; Warschauer & Matuchniak, 2010). The removal of technology from classrooms for instruction reflects the findings of recent research regarding the impact of standardized testing on instructional technology (O’Dwyer et al., 2005; Purcell et al., 2013; Ruecher, 2012; Warschauer & Matuchniak, 2010). Reflecting on the impact of the tangled cords when computer carts returned to classrooms for instructional use, I looked for current studies address the physical state of technology following its use for online testing as an instructional challenge. I found none. Receiving laptop carts in disarray following testing may be exclusive to Hurston Middle School and these small stories. I sought research on student vandalism of technology as well, but discovered nothing. Perhaps these issues are exclusive to schools like Hurston. Further research is needed on how frequently and how long teachers and students are impacted by the removal of technology for testing in high-minority, low-income schools. Additionally, inquiries into ways of reducing the amount of time technology is removed from classrooms are warranted.

Finally, deficits in students’ skill and understanding comprised a barrier for Martin and Samantha. Like their peers at similar schools, students in Martin and Samantha’s classes lacked
the skills and know-how associated with technology use (Ritzhaupt, et. al, 2013). This deficit in competence using technology echoes the findings of Ritzhaupt, Liu, Dawson, and Barron (2013), who found low-income students less technologically competent than more affluent peers. Students could not type and did not understand the concept of the internet. Martin attempted addressing students typing skill by utilizing two typing programs, Typing Agent and Nitro Type, but as reported in chapter four, students’ typing skill at the end of the year were still inadequate. Students’ lack of understanding regarding the internet as a concept was a concern that did not appear addressed during this inquiry. Following my conversations with students, I wondered if they could conceive of a world without the internet and technology. When we talked, their inability to discuss the importance of technology to their futures may reflect Fitton et al.’s (2013) findings that today’s adolescents are incapable of understanding a world without technology. Although students did not lack confidence in using computers as found by researchers examining low-income students’ confidence using computers, I wonder if this lack of understanding results in negative outcomes throughout students’ educational experiences (Okwumabua, et al., 2011). Reflecting back on the research puzzle, this thread suggests students in high-minority, low-income schools may need direct instruction on the internet as a concept. Research into how best to help students conceptualize the internet is needed.

Pondering this thread further, I marveled at Martin and Samantha’s determination when facing the challenges enumerated above. The easiest path led towards technology-free traditional instruction, but both turned away from that route and persisted with technological tools. The little stories of Martin and Samantha expose a counter narrative of teacher use of technology in high-minority, low-income schools. They used technology daily, provided explicit instruction on technological tools, and utilized technology at all levels of the SAMR Model.
First, when not removed for testing, students used technology daily. Once the laptop carts arrived in their rooms at the end of the fall semester, both teachers routinely incorporated the computers into instruction. This is in direct opposition to the grand narrative that claims high-minority, low-income students rarely have access to technological tools (Boser, 2013; Clark, 2000; Cuban, 2001; Department of Commerce, 1995; Purcell et al., 2013; Ritzhaupt, Liu, Dawson, & Barron, 2013).

Second, teachers pushed students towards a better understanding of technological tools. Expressing beliefs and concerns consistent with CRT (Delpit, 1994, 1995; Gray, 2000; Irvine, 2002; 2003; Ladson-Billings, 2006), Martin and Samantha viewed typing skill and word processing knowledge as “genres of power” (Delpit, 1994, 1995; Gray, 2000; Irvine, 2002; 2003; Ladson-Billings, 2006). The concept of “genres of power” posited by Singer Early and DeCosta (2012) and discussed in chapter two, suggests mitigating inequalities in education through direct instruction of academic tasks and procedures in which minority, low-income students lack knowledge. Typing and word processing were “genres of power” for students in Martin and Samantha’s classes and direct instruction and practice in these “genres” was provided. They did this by requiring students to use Google Docs, engage in WebQuests, conduct research online, and use typing programs in class. Considering typing and word processing as genres is consistent with the results of Applebee and Langer’s (2013) recent study on writing instruction in which they found students’ abilities in these areas a focus of writing instruction. Further, Martin discussed helping students build a “toolbox” of technological tools for use in other classes and in later years. Revisiting research on technology in schools, I could not find any examinations on the transferability of technological know-how. There is concern regarding minority, low-income students’ technological abilities in college and the workforce (Bolt & Crawford, 2000; Lankshear
& Knobel, 2008; Servon, 2002), but examinations of how students fill their technological toolboxes and when they reach into them are missing from the literature.

Finally, Martin and Samantha utilized technology at all levels of the SAMR Model. As the year progressed, use at the more transformative levels increased with research tasks dominating instruction in April, May, and June in both classrooms. Martin and Samantha were reflective during our conversations regarding their use of technology in the ELA curriculum and sought new resources and activities as the year progressed despite challenges (i.e. dead power outlets, disorganized laptop carts, and restrictive firewalls).

**Significance**

Taken together, the extensions and reconsiderations of the threads above and this inquiry at large respond to various calls for research on technology use in schools by minority students, (Powell, 2007; Warschauer, 2002), especially research focused on small stories (Ruecker, 2012). In particular, this inquiry examined classrooms servicing black adolescent males, a group many researchers have identified as benefitting from the inclusion of technology in instruction at the middle level (Fitton et al., 2013; Jackson et al., 2008). This inquiry also adds to the qualitative research on technology in middle school ELA instruction (McGrail, 2005; 2007; Ruthven et al., 2004), an area in which most previous research is quantitative (i.e. Boser, 2013; Goldberg, Russell, & Cook, 2003; Langer, 2001; Purcell et al., 2013).

This inquiry is unique in that examines technology use in high-minority, low-income, middle-level ELA classrooms through the use of the SAMR Model, adding to limited research using this model (Crookston Curran, 2015; Rowe, 2014; Strother, 2013). By organizing narratives using the SAMR Model, chapter four provides snapshots of technology use in classrooms based on the degree to which technology transformed instructional activities. This
organizational method reveals technology in high-minority, low-income schools can and does cause transformations at all levels of the model. Using this organizational structure, the present inquiry adds to the literature, responding to Judson’s (2006) call for expanding current understanding on how technological tools are used in high-minority, low-income middle school classrooms.

**Limitations**

As I conclude this inquiry, I remind the reader that it is not without limitations. As discussed in chapter one, I am both a participant and the research instrument for this study. My personal and professional identities may have impacted data collection. First, I am a white woman collecting data in classrooms serving minority students. Second, I worked in a district-level supervisory role within the district in which I collected data. Third, I experienced using technology in my own classroom and hold strong beliefs about the importance of integrating technology into ELA instruction. Notwithstanding these limitations, I strove to meet the criteria for verisimilitude that calls for reasonable and plausible representations of data (Bruner, 1991). By sharing my data analysis process in chapter three and data, located both in chapter four the appendixes, I attempt transparency in my work (Cresswell, 2009). The final barometer of quality in a narrative inquiry, trustworthiness, gave me pause throughout this inquiry (Hatch, 2002).

The concept of trustworthiness still makes me pause. I strive in this chapter to conclude this inquiry, but do so with the understanding that truth and finality are artificial. Clandinin (2013) claims “for narrative inquirers, exit is never a final exit” (p. 44). My participants’ narratives continue without me (Clandinin, 2013). Likewise, I continue to make meaning of the stories we shared without my participants’ involvement. Presently, I find our narratives shaping my decisions as a school administrator. A sentence I encountered during my first doctoral-level
class captures my feelings about this chapter and stage of meaning making: “As long as a person is alive he lives by the fact that he is not yet finalized, that he has not yet uttered his ultimate word" (Bakhtin, 1984, p. 58-59). This chapter is and is not the end.
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Appendices

Appendix A: Student Focus Group Interview Protocols

First Focus Group Interview

1. How often do you use technology at school? Outside of school?
2. How do you use technology at school? Outside of school?
3. What specifically have you done with technology in your ELA class to this point in time?
4. How often would you like to use technology in your ELA class?
5. How important do you think is technology is to your learning?
   a. Why do you feel this way?
6. Describe how you competent you feel with 21st century skills (skills are briefly described to students).

Second Focus Group Interview

1. Describe you have used technology in your ELA class since our last interview.
2. What difficulties did you encounter using technology this week?
   a. How did you react to these difficulties?
   b. How did your teacher react?
3. What successes did you experienced using technology this week?
   a. Describe what exactly made these experiences successful.
4. Do you plan on using technology in ELA class in the next week or two?
   a. Is your teacher’s plan for using technology in future classes a good one?

1. Do you think you benefited from using technology?
   a. Explain how you benefited.
Appendix B: Teacher Participant Interview Protocols

First Teacher Participant Interview

1. Describe your comfort level with technology in your classroom.
   a. How often did you use technology?
   b. How often would you like to use technology in your classroom?

2. Describe your experience using technology in your classroom.

3. How important do you think it technology is to learning and teaching in a secondary classroom?
   a. Why do you feel this way?

4. Describe how you teach 21st century skills in your ELA classroom.

Final Teacher Participant Interview

1. Describe how often you used technology during this year.
   a. Did your usage meet your expectations for usage?
   b. What specific 21st century skills did you teach during this time?

2. How do you think students benefited from technology usage?
   a. Explain how you know they benefited in these ways.
Appendix C: Selections from Martin’s Conversation Transcripts

March 3, 2015
Researcher: Um, okay, so talking about technology, can you tell me a little about your comfort level with tech in your classroom?
Martin: Um, I've experimented a lot with things in the past, so I feel like I have a pretty high comfort level in terms of trying new things. I don't believe. I do, I very much believe in trying new things and if they fail, okay, let's go back and let's see what was good or bad about it and move on from that experience. Um, I'm not very much a stuck in their ways kind of teacher. I actually like the change. It makes things more interesting. Um, I think in terms of the one thing I feel like is kind of getting crunched out and maybe it's not my place as an English teacher although I kind of think it is, is a lot of the kind of digital literacy aspect of it um and them being able to use so much of this technology um as a tool as opposed to it being some sort of gimmick. Um, I think a lot of times we bring technology in and it's a gimmick. Um, smart boards for as great as they are mostly gimmick. Um, they are more interesting. There is no one out in the world that needs a functional use of a smart board to get by other than teachers. Um, so I think the greater thing is being able to teach them to use the internet as a tool, to be able to use, you know hopefully we'll get to the place where we will be able to use their phones as a tool. Um, and I think that's one part kind of missing. I don't always feel I have enough time to kind of get that across because we feel and I can say this as an English teacher, all English teachers right now feel so pressed to get in so much. Um, but I feel that my comfort level is pretty high. Do you want me to go into stuff I've done?
Researcher: Yeah, yeah, yeah, go! Keep talking!
Martin: So, I've done a lot. When I was in KY, I fundraised to buy an iPod Touch cart with 32 iPod Touches and headphones and they all charged together and you could all sync them together. Um, and we were going to use those as sort of little portable computers on every desk and um that had a few great moments. The problem was it turns out our proxy server for the district didn't play nice with Apple products.
Researcher: Oh, no.
Martin: So, that didn't work out nearly as well as it could have and the sad thing was that the district IT person knew that and knew I was trying to do this and didn't warn me. Um, cause otherwise, I would have just gotten netbooks or something.

April 7, 2015
Researcher: I remember when I came in right after the tests and that back (referring to the computer cart) was a hot mess. How long did it take you to get that all fixed?
Martin: We actually got a little bit lucky. We had an assembly the next day and I grabbed my two assistants to come do this and they get paid and hot chocolate and it took the three of us about 45 minutes to get it back together. And it's back to being organized. It looks the way it’s supposed to. Something happened this morning where one fell back, so I have to go back there and fix it. One thing going wrong every day is fine. It's when it came back completely mauled that was a problem.
Researcher: So tell me a little bit about why having that back a hot mess is so problematic
Martin: Well so and I know this is gonna be audio and this is more of a visual problem.
Researcher: I can take pictures
**Martin:** Let me get one. It's kind of already pulled out. So what happens is, if the blocks fall behind, you'll try to take the cord to grab it and this will pop off and all of a sudden you might have the computer plugged in but it's not charging. And so what we were having, and why it was such a problem, is that for two weeks we had a bunch of them in the back unplugged. Three weeks and no one keeping it sorted is that kids… the batteries were dying way early. So it used to be that these computers were plugged in overnight, all night, would make it almost all of them the whole day. And then I would just switch out- take one from the top. Put that in the bottom. We make it through the day. What was happening is they were going dead the first and second periods. We were plugging them back in to get them charging. What was happening is plugging them back in but they weren’t actually charging and so there was a lot of switching out computers over and over again. Just trying to find the mix and the balance of the ones that were actually charging. And so it did kind of teach me a little bit more. Like now I know if you plug it in and it's charging, this thing blinks which I didn't know before. I know now that that's actually charging when I plug it in. It just made for a lot of wasted time and a lot of like tech-support as opposed to helping kids with what they were doing and so that was just, it was more annoying than anything else.

**Researcher:** It wasn't like the end of the world it, but it was still irritating

**Martin:** Yeah like you said, you think… you gave me this card said, ‘Keep it together.’ and I said, ‘Not a problem.’ You took the car to from me… to give it back and it was so messed up that it required three people 40-45 minutes to fix and cost me a bunch of hot chocolate.

**Researcher:** And so did you… did you complain to anyone about the state of the carts? Because I know I was in M's room, her cart was in the same sort of disarray.

**Martin:** I told our technology coordinator.

**June 26, 2015**

**Martin:** Yeah you really get to know them over the course of the year. There were probably 30 or 40 kids that I had this year that I can't tell you a whole lot about and the nature of having so many students. So, I feel like ultimately that's one of the biggest challenges because the technology should be used for what's most useful for them. The keyboarding is useful for everyone. They’re supposed to be starting not now in second or third grade out over at (the elementary school)

**Researcher:** That's great and I noticed when the kids were playing the car game, almost all of them were hunting and pecking

**Martin:** Yeah and there were a few of them that weren’t but it was cause their parents made them do like some online program or something. It was never done at school or if they were in some program, it wasn't done by the school. I remember back when, I don't know how long it was 3 or 4 years ago we were in Kentucky writing the first curriculum after the common core. It was like we were sitting there looking at, I think it was standard 10 which says something about being able to sit there for 30 to 40 minutes and type without stopping. And we were like, “We need keyboarding, stat!”

**Researcher:** One of the technology standards?

**Martin:** Yeah but its written into standard 10 on the writing standards
Appendix D: Selections from Samantha’s Conversation Transcripts

March 31, 2015
Researcher: Okay. Alright. So, let's jump into our techie-like questions here. Um, so first I'd love to hear about your comfort level using technology in your classroom.
Samantha: I think I'm pretty comfortable. I like to experiment and use different types of programs. I'm always looking for different types of things and trying to, so I'm comfortable with most things I would use in the classroom.
Researcher: So, what was the last like cool thing you found and tried out in class?
Samantha: Well, today we used this like Socrative which I had found out about a couple years ago, but I had been using the clickers, the little Smart Board clickers.
Researcher: Yeah, I saw those in the back there.
Samantha: And they can be kind of, they're old, so the technology can be kind of annoying and so, I honestly started this maybe with one class I did it last week and I started with every class today and I think it's, it's cool because it's easier for the kids to access. It's simpler. For the first time, they're going to be kind of like, huh? but as a whole, it's pretty simple and it's something for me to make quizzes also and I can just ask a question and I can hit a button and I can get their response like that and I don't have to (inaudible) it can be something I do at the spur of the moment.
Researcher: And it looked like you had it timed as well this morning?
Samantha: Mhm You can have it timed. You can have it student navigated and timed or you can have it teacher driven, so you can set up a quiz and tomorrow I'm going to have it where I set it up already and then I'm going to be able to control the pace throughout the lesson. It's cool.

May 22, 2015
Samantha: They told me in the first day of school Facebook no, Ms. X
Researcher: No, that's for old people
Samantha: That's why I'm on it. So, you know, like have them create some posters or whatever and have them create, let them post it from their own Instagram and let them hashtag my class, but I just, it’s just a little bit too fuzzy, with like the policies around using Instagram and social media with a teachers and students. So we're not even gonna go there. We're just gonna do a class page. I've done that before. They have lots of like things online for like creating a social network online. I really don’t want to go through a whole bunch of things. But I really want to do something were we can do our own page and they can all share. And then that way if they want to share that thing they posted on our class website to like their own account then they can do that themselves. I just wanted there to be some relevance to their own life. Where they can actually say what they felt about a topic and like their own real online world and so that's how we figured it would be the safest way to do that
Researcher: and so you're still trying to figure out the best platform to have all this posting on?
Samantha: I think I can use a Facebook that's just for the class. That’s like a closed Facebook account to post it all on
June 16, 2015
Researcher: So I just wanted to ask a few questions about wrapping up the end of the year and technology. I'd love to hear how the social media campaigns went.
Samantha: Well they were actually really interesting. The way that… I don't have any samples… the way I wound up doing it was different than the way I intended. I used much more… I directed it much more than I expected to.
(Conversation is interrupted by a student.)
Samantha: Used more direction than normal normally I would, you know, make it kind of a group thing and I guess allow them to construct their meaning through research. But I wound up making them go through a series of worksheets.
Researcher: I remember seeing those when the kids were in the lab
Samantha: Yeah this isn't the best example but I took them through kind of questions and charts and took them through their research and looking at things like advertising techniques and examples of social media and actually it really works really well. I think I might use more of this format the next time I do this sort of thing because then after they were like able to respond to different prompts then they were able to do their piece by themselves. This gave them a little more foundation but they didn't actually get to do the social media project. They just kind of planned it which was still good because we just didn't have a lot of time because people stop coming to school.
Researcher: So why did you decide to use the worksheets this time around when you haven't in the past?
Samantha: Well initially the reason was that I was trying to do two things at once. I was trying to do make-up for the test we had to take online
Appendix E: Selections from Student Focus Group Interviews

April 25, 2015

**Researcher:** So tell me about the times you're doing technology and you are not on iReady. Like I saw you using the quiz feature in class and I know you've done a little bit of research on like Wikipedia when you were doing the project on the music types. Can you tell me a little bit about using tech when it's not iReady in ELA class?

**Ariel:** Like we can check our grades on Engrade and like if Mrs. X assigns a test on Engrade.

**Researcher:** So you can do a test right in Engrade? And it's like a multi-guess or multi-question kind of thing?

**Ariel:** Yeah

**Researcher:** And what else? What else do you use technology for in this class?

**Travis:** Research.

**Researcher:** Tell me a little bit about, because I had come in and started observing after you guys had done all of the research for your last project, so can you tell me a little bit about how you did that on the computer?

**Ariel:** So we basically just took the topic, like our topic was the genre of music and then you just tell how that like when it used to be popular and how it was made and people who sung it and put it on construction paper and present it.

**Researcher:** And did you guys get to choose like what type of music or did Mrs. X assign?

**Travis:** We chose.

**Ariel:** I mean she assigned the groups but we chose the music.

May 13, 2015

**Candice:** When people were typing it looks funny cause like it has a line and it says “A” and it has a line and it says “C.” When we were typing I was like “I’m controlling your life now!”

**Tatyana:** Oh, when both of you all type at the same time?

**Candice:** “No, stop!”

**Researcher:** It is kind of creepy to see the other person’s letters show up on your screen.

**Iris:** We were getting confused because I was like typing this and she was typing that.

**Candice:** And the letter would come between each other.

(Laughter)

**Researcher:** Now, were you doing that in separate places or in the classroom?

**Candice:** We were right next to each other.

**Iris:** And then we has that when we got home, but we were on the phone. So, I don’t know why we did that. We were just… And we did it on the music project, too.
Appendix F: Examples of Annotated Photos
Appendix G: Excerpts from Martin’s Classroom Observations

Martin’s Classroom February 24, 2015

Book fair is occurring down the hall and students are leaving the classroom in small groups to attend the book fair.

All remaining students in class are working on iReady- a reading intervention program.

- 13 students are in class and on the computers when I walk in
- 6 boys and 7 girls

Computers (laptops) are not plugged in, running on battery power.

- All students are wearing headphones.

Students are working on various iReady lessons- program differentiates.

- 2 iReady assignments are expected to be complete per week.

About halfway through the class period, book fair students return and swap places with the students on iReady.

Martin encourages students to look at the Bookfair for bargain books or to window shop for great titles they can find together at the library.

- Seems very conscious of students’ financial limitations

Sends students to the book fair.

Remaining students log onto iReady.

Martin’s Classroom April 2, 2015

Students on a WebQuest the teacher found online.

Created for the students will be reading.
Every 45 min have to unblock to allow students back into the site

Filter put in place over the holidays

More access than the old block, but time issue

After testing, computers not holding a charge all afternoon

   Not sure why

Returned cart with cords all messed up in the back

9 computers out in the room for small group

Can't do whole class- too much unblocking to manage

Students have to leave WebQuest to search for definitions- have to be able to search on their own

Starts with a YouTube movie

High student engagement

Sat and chat with one student working through the WebQuest

   He defined share ripping as homelessness

   When I asked him about his definition on his paper- which was correct- he couldn't put it in his own words

   Didn't know what "tenant" or "agriculture" meant- key parts of the definition

**Martin’s Classroom June 4, 2015**

Students who are done are working on Nitro Type- computer car racing game that moves cars based on how fast students can type a given sentence
Kids are really into the racing game

Teacher tells me it's one of the most popular on campus right now among kids

Students can enlarge the type on the screen

Students can race against each other if they are friends on the system

Two boys arrange a race in front of me
Appendix H: Excerpts from Martin’s Classroom Observations

Samantha’s Classroom March 3, 2015

Students taking a quiz on the computer

Quiz set up on Engrade

Student tells me they do this a lot and that using the quiz function in Engrade is "easy"

Quiz is on introductions

Quiz on the mechanics of the introduction of a traditional essay

Very step-by-step sort of way to approach writing an essay

Quiz allows students to manipulate text- moves boxes containing sentences into the correct order

Scores are all over the place 60% to 100%

60% is unhappy about his score "I read better than that"

After the quiz, students are to create a multi paragraph outline on one of two topics

Wondering where students are supposed to get that info?

Not connected to a text- all based on prior knowledge

Samantha’s Classroom April 8, 2015

Two boys can't access their story on Google Docs

I help them out- think they just clicked on the wrong thing

Teacher is working with small group and probably wouldn't have been able to help in a while

Boys then try to look up "kingpin"

Google definition doesn't just pop up

4 students on iReady
13 students in small group

Furniture in double horseshoe

Computer screens facing teacher so she can see what's going on on the screens

Student on iReady totally zoned out (see photo)

On level K- babyish worm/caterpillar is guide on the screen

Boy with underlining typing all period

I ask to take photo of his checklist (see photo)

Samantha’s Classroom May 14, 2015

Watching Remember the Titans and examining how the golden rule is portrays in the movie—comparing it to the text

Have a worksheet

Students have to fill out the chart as they watch the movie
One student in back of room with an earbud in. I can hear music when I walk close

Students singing along to the singing in the movie- "we are the Titans..."

Students using teacher-provided clipboards to write on their worksheets
Appendix I: Excerpts from Researcher Journal

March 3, 2015

This (technology use in Samantha’s class) is very different from tech use in Martin’s class. Students use computers for a "do now" quiz. Quiz topic is the traditional essay structure. Scores aren't great.

Tech is being used authentically! It is just part of what students do in the class. It feels very organic.

Several students looked up their current grade in Engrade. This appears to be something they do often. They confidently clicked through screens to get to the one with their grade from Samantha’s class. A few students checked grades in other classes, too. I wonder how often students talk to their teachers about their grades either virtually or in person?

April 29, 2015

Samantha’s class seems to be getting more into To Kill a Mockingbird. They read/heard the chapter in which the prissy teachers sees the "cootie" in the boy's hair. It's a wonderfully gross scene that I can't believe I forgot about. Most students seem to be reading along with the audio. The reader is decent. I can't remember if I read it with my students or relied on the audio book. I probably read it aloud, as that is my favorite.

In Martin’s class students were in stations again. I was surprised by the slow speed of turning outlines into paragraphs. Several students did not finish even though I felt there was ample time. They didn't seem to struggle with the technology, rather with the writing. Interesting- I would not have expected this sort of struggle at this point in the year.
May 8, 2015

There was an amazing moment yesterday that captured the power of integrating technology into an ELA class. Samantha was reading a poem with her students. It's short, about three stanzas and the language isn't particularly difficult, but her students were mostly staring blankly at her as she read. Following the first read, I don't think a single student in class was able to summarize the text. As a second read, she shared with her students an animated version of the poem. It was well done, artsy, and the students all watched attentively. When the video ended, a boy sitting in front of me blurted out, "I got it!" I leaned over- "So, what's the poem about?" "The boy is unappreciative of his father." I smiled- "Bingo!" His grin nearly split his face in two. His hand shot up in the air, desperate to share with his teacher his new understanding. It was amazing to see the impact of the animated text on his comprehension. In terms of visual support, it wasn't huge, but it was enough to help it click with this boy. I was so excited for him. I'm not sure what it was about the video that made him suddenly understand, but it was so exciting to see him "get it." It also reaffirmed for me the potential power of technology to support traditional ELA instruction. For this student, a short video made the difference in understanding.
December 17, 2014

Bridget Mahoney, M.A.
Teaching and Learning
4202 East Fowler Ave., EDU105
Tampa, FL 33620

RE: Expedited Approval for Initial Review
IRB#: Pro00018996
Title: Urban English Language Arts Teachers and Technology: A Narrative Inquiry

Study Approval Period: 12/17/2014 to 12/17/2015

Dear Ms. Mahoney:

On 12/17/2014, the Institutional Review Board (IRB) reviewed and APPROVED the above application and all documents outlined below.

Approved Item(s):
Protocol Document(s):
Study Protocol.docx

Study involves children and falls under 45 CFR 46.404; Research not involving more than minimal risk.

Consent/Assent Document(s)*:
Child Verbal Assent (is not stamped)
Child Written Assent.pdf
Parent Consent.pdf
Teacher Consent.pdf

*Please use only the official IRB stamped informed consent/assent document(s) found under the "Attachments" tab. Please note, these consent/assent document(s) are only valid during the approval period indicated at the top of the form(s).
It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45 CFR 46.110 and 21 CFR 56.110. The research proposed in this study is categorized under the following expedited review category:

(5) Research involving materials (data, documents, records, or specimens) that have been collected, or will be collected solely for nonresearch purposes (such as medical treatment or diagnosis).

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval by an amendment.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

John Schinka, Ph.D.
Chairperson
USF Institutional Review Board