Spring 5-12-2014

Leveraging Digital Technology in Social Studies Education

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by

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A dissertation submitted in partial fulfillment of the
requirements for the degree of

Doctor of Education
in
Educational Leadership: Curriculum and Instruction

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Portland State University
2014

Abstract

Today's K-12 classrooms are increasingly comprised of students who accomplish much of their informal learning through digital media and technology. In response, a growing number of educators are considering how they might draw upon these informal learning experiences to support student engagement and learning in the classroom through technology. The purpose of this study is for social studies educators, school administrators, teacher educators and curriculum developers to understand more about the potentials and limitations of integrating technology such as a digital text. This research focuses on the differences in experiences using a digital text and a printed text from the perspective of four high school social studies classes. The curriculum for the printed and digital texts was developed in collaboration with the Choices Program for the Twenty-First Century at Brown University.

This research was based on the assumption that the thoughtful integration of a digital text in the classroom can support student engagement and differentiation while facilitating learning that students can readily transfer to multiple political, economic and social contexts beyond the classroom. Critically, students of poverty and students of color have the most to gain from increased access to digital technology in the public education system. People of color and people of poverty in the United States have significantly less access to technology at home than their white and middle class counterparts. Therefore, the classroom presents an opportunity for students who lack access to digital learning opportunities in their home environments to develop the

technological fluency and digital literacy that are increasingly necessary to engage in multiple political and economic spheres in the United States.

The current literature on digital technology in education lacks sufficient empirical evidence of the potential benefits and challenges that digital technologies may offer secondary social studies education from the perspective of the classroom. Therefore, the classroom field test that was undertaken for this research offers a more empirical understanding of digital texts from the important perspectives of students and teachers in the classroom learning community. This research was conducted in a large, suburban high school in the Portland Metropolitan area and compared the experiences of tenth-grade World History classes working with a print text to the experiences of tenth-grade World History classes working digitally. The mixed-methods multiple-case study design addresses the following research questions: a) In what ways, if at all, does a digital text provide high school social studies' students different affordances and academic skills than a printed text? and b) How, if at all, do high school social studies students interact differently with a digital text from a printed text?

The analysis of data offered evidence that the use of the digital text supported technological fluency, the creation of more sophisticated learning products, differentiation for multiple learning styles and a more supportive reading experience due to its multimodal features. These unique academic affordances were not equivalently supported by the use of the print text. However, the type of text did not demonstrably influence students' ability to communicate their thinking in analytical writing. The analysis of data also suggested that students were somewhat more cognitively and

behaviorally engaged in the digital case studies. Importantly, the digital text did not create a negatively discrepant learning experience for students of color but, rather, supported increased student engagement for both white students and students of color.

The data also suggested that the digital text posed significant challenges for both students and teachers. The digital experience required students to learn new and challenging technology skills. The digital text also required more class time and created more classroom management challenges for teachers than the print experience. Despite these additional challenges, both students and teachers expressed a preference for the digital experience. Thus, the digital text seemed to provide both a more challenging and a more rewarding experience for students. This study has implications for educators that are interested in thoughtfully integrating a digital text or, a similar digital technology, in comparable classroom contexts.

DEDICATION

For Maddox and Reese,
For your cousins Josephine, Eloise, Finley, Frances, Genevieve, Isabelle & those to come:

The learning that doesn't come easily is the most satisfying.

ACKNOWLEDGEMENTS

Many people have made significant contributions to this work. I am grateful for the opportunity to collaborate with the incomparable curriculum development team at the Choices for the 21st Century Program. Pulling back the current on your operation has felt very much like revealing the Wizard of Oz, just as you have often joked. The contribution you are making to social studies classrooms and our American democracy is no less profound and all the more impressive from this view.

Craig Hausman and Tryon Thompson, I am in debt to and in awe of the examples of innovation and excellence you have provided.

Moti Hara, Samuel Henry, Karen Noordhoff and Gayle Thieman, you have affirmed my belief that education is worthy of all the compassion, intelligence, energy and dedication we have available to invest. Thank you for reminding me what excellent teaching and mentoring feels like.

Samuel Henry, Bernd Ferner, Audrey Lingely, Karen Noordhoff, Edgar Solares, Katie Toppel and Jennifer Wells, our cohort has felt like coming home for the first time since I began my work in education. "I love people who harness themselves, an ox to a heavy cart, who pull like water buffalo, with massive patience, who strain in the mud and the muck to move things forward…. The work of the world is common as mud. Botched, it smears the hands, crumbles to dust. But the thing worth doing well leaves a shape that satisfies, clean and evident." (Marge Piercy)

Michael, thank you for being the rudder and the anchor for our boat so that I could be the sails. I could never venture so far out to sea without knowing you are always on board, ready to steer us to a safe harbor when I am feeling tattered.

Mama and Dad, my first and most important teachers, thank you for dedicating so much energy to ensuring that we were able to keep educating ourselves for the rest of our lives. Your examples have offered me an intimate glimpse of the unique and transformative role that education has played in the story of America. I can only hope to offer as much to your grandchildren.

Shannon & Henry, Mark & Kirsten, and Connor & Tara, thank you for being my best friends in addition to my siblings. The work that you do in the world makes me better at my own and there is nothing quite as satisfying as working alongside you.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

THEORETICAL FRAMEWORK

Digital technology has profoundly transformed the landscape of the twenty-first century (Friedman, 2005; National Council for the Social Studies, "Position Paper on Media Literacy," 2009). The rapid expansion of innovation in computer technology over the past two decades has wrought irrevocable changes in the economy, society and politics (Benkler, 2006; Friedman, 2005). In this context, many education scholars, curriculum developers, school administrators and teachers are currently trying to understand how to harness the unique learning experiences that digital technologies make possible in order to develop the skills that K-12 and postsecondary students require to critically engage with the increasingly digital political, economic and social spheres (Bonk, 2009; http://www.edutopia.org/technology).

In contrast to the classroom and teacher-centered model for education that has dominated American education systems for the last century (Kliebard, 2004; Ravitch, 1976), digital technologies allow content from a wide variety of sources to be accessed from a range of geographical locations (Bonk, 2009). Digital technologies have also created new avenues for students to participate in their own learning (Davidson & Goldberg, 2009) such as multimedia content consumption and multimedia content creation that can offer students more learner-centered opportunities to engage with learning communities both within and beyond the classroom (Bonk, 2009; Davidson & Goldberg, 2009; Herring, 2008). Digital technologies are increasingly recognized for the ability they offer learners with a wide variety of needs to learn content and skills from a wider range of teachers, peers and experts than anytime in the previous century (Bonk,

2009; Prensky, 2010). For example, the Internet provides our society unprecedented access to a wider variety of content than has previously been available (Benkler, 2006). Importantly, much of the high-quality academic content that was previously only accessible through formal learning opportunities within educational institutions has become accessible to anyone with a computing device and Internet access (Friedman, 2005).

As the World Wide Web has expanded access to academic content, many people in the United States and around the world have also gained increased access to Internet connectivity and personal computing devices (VanFossen, 2006). This trend has been further facilitated by an accompanying expansion of access to open-source or free software (Bonk, 2009). In the new learning environment created by greater access to technology infrastructure, computing software and a larger volume of quality academic content, educational institutions in the United States are experimenting with the best ways to harness the potential benefits of digital learning opportunities.

1.01 Digital Natives v. Digital Immigrants

This research began from the premise that digital technology influences the political, economic and social environments of the United States (National Council for the Social Studies, 2009) and focuses on the implications of the broader trends in digital learning for K-12 social studies education in the United States' public education system. Montgomery (2008) notes that students born in the last two decades of the twentieth century are "the first to grow up in a world saturated with networks of information, digital devices, and the promise of perpetual connectivity" (p.25). Immersed in a world

increasingly shaped by electronics and Internet access, students in the K-12 classrooms of the twenty-first century are often referred to as "digital natives" (Prensky, 2001) who accomplish most of their informal learning through digital media and technology (Bers, 2008; Bonk, 2009; Levine, 2008; Montgomery, 2008; Prensky, 2010; Thieman, O'Brien, Lee & Hinde, 2009). Prensky (2010) characterizes the reality of digital natives as one where information continuously "explode[s] anew" as electronics become "smaller, faster, better, cheaper" and accessible to an increasing number of people (p.9).

The literature reviewed in chapter two of this dissertation relies extensively upon Prensky's (2001) metaphor of today's K-12 students as "native" to digital technology. This metaphor is useful insofar as it captures how the increasing ubiquity of computing devices and Internet access is creating a new environment ("country" or "culture" as the term "native" implies) for informal learning outside the classroom (Carr, 2008). Herring (2008) offers a similar, although somewhat more nuanced, observation of the generational divide on attitudes to technology. She argues that today's youth and young adults uncritically accept digital technology as part of their environment-- as previous generations accepted similarly impactful technologies such as the automobile or television.

In contrast, educators are often characterized as "digital immigrants" to emphasize their struggle to gain proficiency with new digital technologies and their preference for curriculum and instruction dominated by text and hardcopy (Prensky, 2001). Ertmer's (2005) empirical study of technology in the classroom concluded that a teacher's pedagogical orientation to technology is the best predictor of how successfully

technology will be integrated. This finding is especially noteworthy given that more than a decade of literature on digital learning has extensively documented the barriers that a "digital immigrant" teaching force poses to meaningful technology integration in the public education system for its "digital native" students (Berson & Berson (2003); Berson & Baltya (2004); Levine (2008) Prensky, 2001; Shiveley & VanFossen, 2008; Thieman, O'Brien, Lee and Hinde, 2009; VanFossen, 2000; VanFossen & Waterson, 2008). VanHover, Berson, Bolick and Swan (2004) note that, "research in educational technology consistently reveals that teachers and teacher educators experience difficulty conceptualizing the nature of meaningful technological integration and struggle to incorporate technology into their teaching" (p.109).

Prensky's (2001) contrasting metaphors of "digitally native" students and digital immigrant" educators are useful insofar as they emphasize that educators cannot assume that the ways they are most comfortable teaching and learning are also how most students prefer to learn. However, referring to students monolithically as "natives" or all teachers as "immigrants" belies the more complex reality that today's students and teachers have diverse levels of comfort and skill with digital technology both in the context of the classroom and outside it. For example, Buckingham (2008) argues that a wide spectrum of "technophobic" to "technophilic" attitudes towards technology exists among educators as well as in our wider society. Similarly, Darling-Hammond (2010) and Montgomery (2008) argue that a disproportionate number of students of color and poverty lack the same access to informal digital learning experiences outside the classroom enjoyed by their white and middle class peers (Darling-Hammond, 2010; Montgomery, 2008).

1.02 The Digital Divide

The reality that the benefits of digital technology often fall along racial and economic fault lines is referred to as "the digital divide" (Tabourn 2008; VanFossen, 2006). In 2010, the Pew Research Center found that 77% of white Americans report using the Internet and 65% of white Americans have broadband access to the Internet at home. In contrast, 66% of black Americans and 65% of Latinos reported using the Internet while only 52% of blacks and 45% of Latinos had home access to broadband Internet (Livingston, 2011). Significantly, Montgomery reports "disparities in home computer and Internet access rates are larger for children than for adults" (Montgomery, 2008, p.39). Thus, the gap in access to technology is likely higher for K-12 students of color and poverty than the percentages reported above reflect.

Providing these students an opportunity in the public education system to gain the same skills that their predominately white and middle class peers learn informally is one of the key motivations for this research. Darling-Hammond (2010) argues that one of the most important functions of the public education system is to mitigate social and economic inequities such as the digital divide. In fact, Darling-Hammond's extensive research on how the current inequalities of public education threaten the social and economic fabric of the United States concludes that technology infusion is a critical factor for improving the quality of education offered to students of color and poverty in the United States.

Because the primary purpose of social studies is to educate U.S. citizens for democratic participation (Giroux, 1992; Kliebard, 2004; Mahoney, 2000; Ravitch, 2003;

Ross, 2006), social studies curriculum and instruction presents an appropriate and powerful opportunity to address the digital divide. A growing number of social studies scholars argue that digital technology should be purposefully integrated into curriculum and instruction because democratic participation in the twenty-first century increasingly requires technological fluency and digital literacy (Berson & Berson, 2004; Rheingold, 2008; Vanfossen, 2006).

1.03 Technological Fluency & Digital Literacy

In 1993-- two years before the Internet went public with the launch of Netscape Navigator (Friedman, 2005)-- Seymour Papert offered a prescient definition of technological fluency as: "the ability to use and apply technology in a fluent way, effortlessly and smoothly, as one does with language…also the ability to learn new ways of using computers in a creative and personally meaningful way" (Bers, 2008, p.156). Such technological fluency is increasingly necessary for accessing higher education, applying for and retaining employment and accessing the information required to make many significant political and financial decisions (Prensky, 2010). In short, technological fluency is becoming a prerequisite for admission to political, economic and social spheres in the United States. Therefore, this research assumed that students need access to digital technology and the opportunity to develop technological fluency that a digital text can provide. Additionally, technological fluency provides a foundation for developing the more cognitively complex skill of digital literacy.

Many of the social studies scholars reviewed in the following chapter argue that digital literacy is one of the most vital skills for democratic participation in the twenty-

first century (Bennett, 2008; Bers, 2008; Berson & Vanfossen, 2008; Berson & Berson, 2003). The National Council for the Social Studies defines digital literacy as "the use of diverse types of media and information communication technology to question the roles of media and society and the multiple meanings of all types of messages" (National Council for the Social Studies, 2009, p.4). In other words, digital literacy is the application of robust, higher-order thinking skills to the onslaught of information emanating from both the Internet and a host of other digital technologies. For example, U.S. citizens increasingly need to be able to access information about important political processes such as elections or legislative initiatives through digital media.

One indication of the growing need for developing digital literacy in the classroom is Carano and Berson's (2007) finding that 76% of teens access the majority of their information on current events exclusively online (p.67). In light of this, young people in today's secondary classrooms require the ability to analytically and reflectively navigate the information they are accessing online in order to impact the political process through individual or collective action as future citizens. Therefore, the term digital literacy encompasses an ability to critically evaluate information that is often delivered in the multiple modes of video, audio, and text simultaneously. Willet (2008) argues that the permeation of Internet advertising increasingly blurs the "boundaries between public and private spaces" and "between consumers and citizens" (p.53). In other words, students need to be able to distinguish between the types and purposes of the information they are receiving from digital outlets. Further, they need to practice critically evaluating

media content in order to use information they deem important to make autonomous political and economic decisions.

1.04 The Problem

The National Council for the Social Studies' 2009 position paper on media literacy articulates the growing importance of developing digital literacy in the following statement:

> The multimedia age requires new skills for accessing, analyzing, evaluating, creating, and distributing messages within a digital, global, and democratic society….Whether we like it or not, this media culture is our students' culture. Our job is to prepare them to be able to critically participate as active citizens with the abilities to intelligently and compassionately shape democracy in this new millennium (Retrieved from: http://www.socialstudies.org/positions/medialiteracy, p.4).

The research undertaken here is based on the assumption that integrating digital technologies in the social studies classroom is one potential avenue for developing the twenty-first century skills enumerated above. Given the need for social studies educators to increase students' technological fluency and digital literacy, the thoughtful integration of digital devices that offer software, data storage and Internet access-- such as a laptop, iPad, iPod or smartphone—may offer students significant advantages over printed instructional materials (Bers, 2008; Berson & Berson, 2003; Bonk, 2009; Lee, 2002; Prensky, 2010).

Digital technology can support effective curriculum and instruction in two significant ways. First, because a growing number of students in today's K-12 education

system either already learn informally through these computing devices (Bers, 2008; Levine, 2008; Montgomery, 2008), or express a desire for greater access to these devices (Bonk, 2009; Prensky, 2010), digital technology provides a relevant and meaningful connection to many students' lives outside the classroom. Offering students an opportunity to learn formally through the technologies that they are increasingly likely to be learning with on their own may, therefore, increase student engagement (Fredricks, Blumenfeld & Paris, 2004). Second, digital technologies have the potential to support situated learning (Brown, Collins & Duguid, 1989) that immerses students in social studies classroom practices that readily translate to contexts beyond the classroom where they will use their knowledge and skills. In addition to the potential benefits of providing students relevant and transferrable curriculum and instruction, the examples of digital technology referred to here can provide students efficient access to multimedia content such as hyperlinked text and embedded audio and video that support both appropriately differentiated learning and multiple learning styles in the social studies and across content areas (Rose and Meyer, 2002).

While this research specifically explored the integration of one digital device, the iPad, many of the potential benefits of a digital text enumerated in the following section could be supported by other digital platforms with comparable software and data storage capacities and Internet access. Similarly, digital technologies may support learning experiences beyond reading a digital text such as: online research; online collaboration between students or with experts beyond the classroom; or student creation of digital learning products such as websites, blogs, podcasts or films. Therefore, wherever

relevant, my argument refers more broadly to "digital technology" to acknowledge the shared potential for increasing student engagement by supporting differentiated curriculum and instruction that meets the needs of multiple learning styles across a number of digital platforms that includes, but is not limited to, digital texts.

1.05 Digital Texts

The most significant benefit of digital texts is the capacity to bundle multimedia or multimodal (O'Brien & Scharber, 2008) content in a single delivery package. O'Brien and Scharber (2008) define a digital text as one where "ideas and concepts are represented with print texts, visual texts (photographs, videos, animations) and audio texts (music, audio narration, sound effects) and even dramatic or other artistic performances (drama, dance, spoken word)" (p.66). In other words, a digital text allows students to experience audio, visual and text simultaneously in a seamlessly bundled learning experience (Bonk, 2009; O'Brien & Scharber, 2008; Prensky, 2010; Rose and Meyer, 2002). Traditionally, social studies curriculum resources have relied heavily on print text alone or print text with integrated photographs to deliver content (Rose & Meyer, 2002). In so doing, printed texts have often privileged a single learning style or failed to support students with diverse reading or comprehension needs (Rose & Meyer, 2002). In contrast, a digital text's comparative multimodal flexibility allows different learning styles and learner needs to be accommodated simultaneously with a single text (Rose & Meyer, 2002; Prensky, 2010).

For example, the digital version of the text piloted for this research has several functionalities to support diverse learning needs that the printed version does not. I will

briefly discuss a few of the key functionalities the digital text provides here to illustrate the contrast between a digital and printed text. The digital version includes an embedded audio narration of the text to support students who are vision impaired, struggle with language fluency or prefer auditory learning; students can choose to enable or disable this feature. The digital text provides integrated audio-video resources throughout such as two-minute film clips of human rights experts discussing key concepts addressed in the text or songs from different cultures capturing one aspect of the struggle to gain human rights. This multimedia learning support may be especially useful for students that struggle with literacy because it offers learners multiple exposures to new content knowledge. The digital text offers a multi-color highlighting and note-taking function that enables students to highlight the text and/or compose their own electronic note cards in the margins of the text. These electronic annotations can be more flexibly shared or saved than the hand-written counterparts for a print text. The digital text also includes an embedded dictionary and thesaurus for students to reference unfamiliar words to support their understanding of the content as they read. Finally, the graphics provided in the digital text are in color and can be significantly enlarged to allow students to "zoom in" on specific details when analyzing a graphic to understand the content or to support students with vision impairment.

1.06 Differentiation

One frequently cited benefit of digital texts is the ability provided for students to appropriately pace their own learning (Bonk, 2009; Berson and Balyta, 2004). The capacity to deliver enrichment learning opportunities alongside learning supports in a

single text allows students more choice in how they learn (Rose & Meyer, 2002). For example, a digital text can be embedded with hyperlinks to key vocabulary support such as visual images or analogous examples for students struggling with literacy and comprehension. The same text can simultaneously embed hyperlinks connecting students to historical sidebars, parallels with other academic disciplines, or applications of new knowledge to current events. Saye and Brush (2002) argue that such hypermedia can support complex conceptual thinking by offering students "strategic scaffolds" (p.193). Figure 1 (below) offers a visual model of the differentiated learning supports that are uniquely enabled by this function of digital texts.

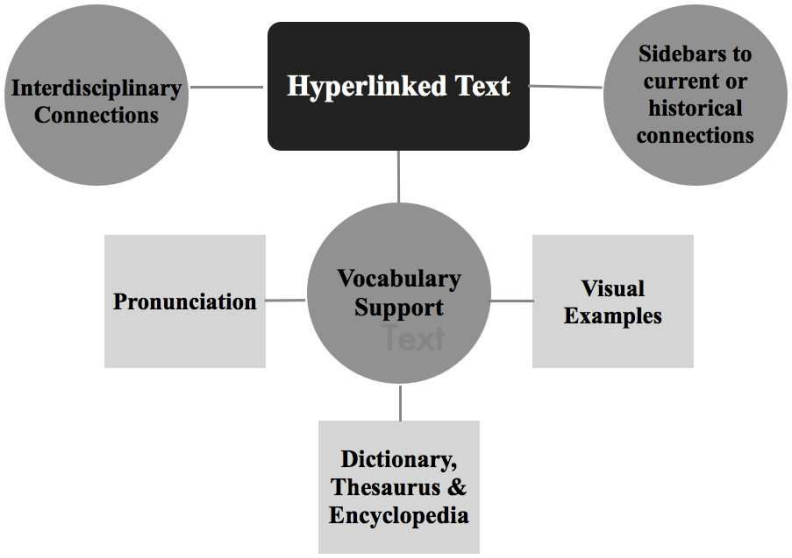

Figure 1: Differentiated Learning Enabled by Hyperlinked Digital Text

Berson and Balyta (2004) are referring to this type of flexibility when they argue that digital technology gives students the "opportunity for instruction that is

multidisciplinary, inquiry-oriented, student-centered and multisensory" (p.142). Bonk (2009) similarly emphasizes that digital learning can be "customizable and specific to the learner's true needs, not prescribed by someone foreign to that student" (p.48). In summary, while many effective teachers already rely on multimedia in the classroom to support student learning, a digital text allows for seamless access to multiple learning supports in a single package and, therefore, may more readily supports differentiation for diverse learners' preferences and needs than a printed text.

1.07 Situating the Researcher

My argument that a digital text can more easily facilitate differentiation to meet the needs of diverse learners than a printed text can is grounded in my experience teaching in the high school social studies classroom. I am neither a digital "technophile" nor a "technophobe" (Buckingham, 2008). Rather, I would characterize myself as a digital immigrant who remains technologically fluent and digitally literate enough to perform as a professional in the work environment and engage in political, economic and social spheres in the United States. Despite this cautious migration, three classroom experiences have convinced me that our twentieth-century models of curriculum and instruction are inadequate for twenty-first century students.

The first was Barack Obama's 2008 presidential campaign. President Obama's campaign successfully galvanized the youngest cohort of American voters almost entirely through digital media. In doing so, the campaign successfully reversed decades of established political science research on the political apathy of young Americans. My high school social studies students, most too young to vote, were, nevertheless, highly

engaged by the Internet's capacity to harness political activity. Many signed up for social media groups that supported the Obama campaign, donated modest amounts of money, or volunteered. Most impressively, many of my students helped their parents become more involved in the election because of their excitement over participating digitally. This experience convinced me that digital technologies were engaging high school students in the democratic institutions of the United States more successfully than traditional paths to participation could.

Three years later, the "Arab Spring" stunned the world by dramatically overturning centuries of dictatorship apparently overnight. The people of Tunisia, Egypt and Libya used the unprecedented voice and access to engagement that digital technologies offer to make the many more powerful than the few in power. Today, the waves of democratic revolt continue to break across Southwest Asia, with the dictators or monarchs of Morocco, Syria, Jordon, Saudi Arabia, Yemen and Bahrain in the most precarious positions they have ever faced (Cammett, 2012). While the success of a democratic future is uncertain everywhere, Middle Eastern policy experts such as Cammett (2012) argue that digital technologies have the potential to upend many of the most entrenched assumptions about the permanence of oil oligarchies or the potential for political and social change in the Middle East. The Arab Spring is the most dramatic, and the most hopeful, example of the power of digital technology to contribute to healthy political participation.

Finally, my experiences teaching summer school to Latino students that failed the Oregon Assessment of Knowledge and Skills (OAKS) reading and writing components

compelled me to explore the possibilities of providing greater equity by integrating more digital technology in public education. Most Oregon students now complete the OAKS by computer, facilitating a faster turn-around of test results. A computer-based state assessment assumes that students are comfortable completing academic work on the computer and have basic technological fluency. Thus, this assessment format becomes a barrier for students to exhibit their reading and writing skills when the assumption about students' technological comfort or fluency is not accurate. Many of the students that I have worked with to remediate reading and writing skills for the OAKS do not have computers in their home and until 2011, OAKS provided students a pencil and paper version when they re-take the assessment to pass. Counter-intuitively (for me), when this population of students was given the option of a pencil and paper version or a digital version, they were overwhelmingly determined to work with the digital version to hone their reading and writing skills on the computer. Many of these students openly acknowledged their lack of confidence with their own technological fluency and expressed a desire to use computers as often as possible to "catch up" with their peers.

For the past several years, many of the students that I have worked with in this summer remediation program have used my classroom as an unofficial personal computer lab during the academic year. Over hundreds of lunches, and many early mornings or late afternoons, I have witnessed firsthand how the access to digital technology has vitally increased the engagement levels of our high school's most vulnerable students. Students check their academic progress online; record multimedia videos and post them to the Internet for class assignments; create digital presentations

and practice them before going to class; log on to class websites for missed assignments; and blog with teachers and classmates. In short, many students find a way to engage in digital learning opportunities in their free time at school because they do not have this option in their homes. This experience prompted me to explore the potential for developing greater technological fluency and digital literacy in the classroom as one avenue for providing greater equity in the public education system. Students of color and students of poverty in the high school where I have worked for the last seven years *know* that they need the same technological fluency that their white and middle class counterparts have gained at home in order to be successful at school and in the world beyond.

1.08 Research Questions

The literature reviewed in the following chapter of this dissertation is overwhelmingly enthusiastic about the potential for digital technologies to increase the relevance of curriculum and instruction as well as student engagement. Despite this optimism, very little of the existing literature on digital technology in education offers more than anecdotal evidence of the positive benefits of increasing the role of technology in the classroom (Berson and Balyta, 2004). The more carefully expressed optimism is tempered by strong appeals for more empirical research on how digital technologies are impacting engagement and learning in the classroom (e.g., Mason, Berson, Diem, Hicks, Lee and Dralle, 2000; VanHover, 2004; Shiveley & VanFossen, 2008). This appeal provided a key motivation for this research. This research hopes to provide a better

understanding of the potential benefits and limitations of integrating digital social studies texts from the important perspective of the classroom.

Despite the arguments I have made for the potential benefits that digital technologies may offer the social studies classroom, my own epistemological orientation is grounded in human interaction. In short, I believe our most powerful learning experiences often occur in human relationships that are not mediated by technology. Therefore, my curiosity about the role that digital technology should play in the classroom seeks an understanding of where technology may enhance or bring additional opportunities to a classroom learning community rather than replace the power or centrality of learning through relationships. To this end, Shiveley and VanFossen (2008) and Mason, Berson, Diem, Hicks, Lee and Dralle (2000) argue that the following question: "Does technology allow students to learn in ways that they could not without technology, or to learn in more authentic or meaningful ways?" (In Shiveley & VanFossen, 2008, p.8) provides a useful framework for technology integration.

The literatures on digital learning and student engagement reviewed in the following chapter of this dissertation strongly suggest that digital learning opportunities offer students a qualitatively different learning experience than relying on the traditional curricular resource of printed text can. This widely shared conclusion is also substantiated by the few empirical studies that exist on how students interact with digital technologies in the classroom (Davies, Ramsay, Lindfield and Couperthwaite, 2005; Reynolds and Caperton, 2011). Therefore, the research questions began from the

assumption that a digital text offers a qualitatively different learning experience to students and sought evidence of *how* these experiences differ.

The following research questions guided this work: a) In what ways, if at all, does a digital text provide high school social studies' students different affordances and academic skills than a print text? and b) How, if at all, do high school social studies students interact differently with a digital text than a printed text, if at all? The term *affordances* in the first research question is intended to capture the complex and intersecting classroom dynamics of students' diverse learning needs, multiple learning styles (i.e. auditory, visual, textual) and student engagement. The relevant academic skills referenced in the first research question are: technological fluency, reading comprehension, and analytical thinking expressed orally and in writing. This research could offer key insights into so-called "best practices" for offering high school students curriculum and instruction that is relevant to their lives today and will prepare them for democratic participation as adults.

CHAPTER II

REVIEW OF THE LITERATURE

This literature review addresses the relevant educational research to argue that including digital technology in the social studies classroom can provide relevant curriculum and instruction for twenty-first century democratic participation, support student engagement in learning academic content and skills and in so doing, provide greater equity for students of color and poverty in the K-12 public education system. I begin by addressing how integrating some aspects of digital technology into social studies curriculum and instruction may facilitate democratic participation in the twenty-first century. Next, I draw upon the last decade's extensive literature on student engagement to provide a theoretical framework for my research on the experiences and perspectives of a social studies class as they work with a digital text and to address the implications for equity of increasing student engagement. I then articulate the unique ways that digital technology can support situated learning and student ownership of their learning. I conclude by addressing the significant challenges raised by embracing technology in the classroom with blind exuberance. I argue that technology is merely a tool that can support—never replace-- effective curriculum and instruction. In order to take advantage of its potential, I believe that digital technology must be integrated thoughtfully by content and pedagogical experts who remain cognizant of the power of human interaction in the classroom.

In the section to follow, I argue that teaching students how to use digital technologies to engage in political, social and economic institutions in the U.S. is an

appropriate goal for social studies education in the twenty-first century. Specifically, I offer that digital natives, while often well versed in using technology informally, need explicit development of digital literacy skills that support democratic engagement. I believe that the secondary social studies classroom is the most appropriate context for these connections to be established. To illustrate my argument, I explore how democratic participation in the United States is changing due to increased access to information and new opportunities to participate through digital technologies. Finally, I present the empirical work in the literature reviewed here that suggests digital natives prefer to participate politically through digital technology to support my argument that teaching technological fluency and digital literacy through a digital technology such as a digital text may positively impact future democratic engagement.

2.01 Digital Democratic Participation

Digital natives, despite their early immersion in digital worlds, often do not know how to translate their social experiences with digital technology into civic engagement (Bennet, 2008; Berson & Berson, 2004; Berson and VanFossen, 2008; Rheingold, 2008; Thieman, O'Brien, Lee, & Hinde, 2009). To this end, Rheingold (2008) aptly cautions: "participants, like literate citizens, aren't automatically produced by computer ownership" (p.103). In other words, although many students are well versed in using digital technology to learn informally, social studies teachers have a vital role to play in facilitating the development of explicit critical thinking skills for learning with digital technology (Thieman, O'Brien, Lee and Hinde, 2009). For example, social studies educators may offer students a more nuanced understanding of how digital media can

provide a greater voice in our democratic institutions than they may be able to arrive at on their own. Rheingold (2008) argues that:

> By showing students how to use Web-based tools and channels to inform publics, advocate positions, contest claims, and organize action around issues that they truly care about, participatory media education can draw them into positive early experiences with citizenship that could influence their civic behavior throughout their lives (p.102).

A growing number of social studies scholars argue that the skills that Rheingold (2008) enumerates above are more likely to be cultivated in the context of the classroom because the teacher's content and pedagogical expertise can guide students to think critically about how to influence democratic institutions (Berson and Balyta, 2004; Rheingold, 2008; Thieman, O'Brien, Lee and Hinde, 2009). To this end, the National Council for the Social Studies (2009) argues that:

> the better we can prepare our students to critically question the information and media they are seeing, hearing, and using, the more likely they are to make informed decisions and to participate as citizens who can shape democracy for the public good (p.6).

Therefore, social studies curriculum and instruction must use digital technology in the classroom to explicitly develop the digital literacy students need to navigate the complex world online and to engage in the digital world as democratic citizens.

The most compelling argument for incorporating digital technology, technological fluency and digital literacy into social studies education is the reality that information

technology has changed the ways we engage as democratic citizens in the United States (Benkler, 2006; Bers, 2008; Levine, 2008; Montgomery, 2008; Rheingold, 2008; VanFossen, 2006). On a practical level, the Internet has made far more information accessible to more people than ever before in human history. Therefore, VanFossen (2006) argues that that the Internet is actually increasing the "degree of political knowledge Americans possess" (p.25). He makes the important observation that the Internet not only allows citizens to easily gain information but also to use that information to influence the political process through the Internet. Writing a representative, signing a petition, joining grassroots activist groups, or donating money are only a few examples of political activity that can occur much more rapidly than ever before because of digital technology (VanFossen, 2006).

Further, digital technology is increasing the impact that individuals have on political and economic institutions (Bonk, 2009; Earl & Schussman, 2008; Levine, 2008; Montgomery, 20008; Rheingold, 2008). The democratic voice provided by the ability for anyone with Internet access to share ideas and opinions with a global audience is widely documented in the literature reviewed here as the primary way in which individuals have most significantly increased their political influence (Benkler, 2006; Berson & Berson, 2004; Bonk, 2009; Levine, 2008; Montgomery, 2008; Rheingold, 2008). Benkler (2006) and Levine (2008) both characterize the new landscape wrought by digital technology as a world where democracy is no longer the "spectator sport" of the past as citizens have many more opportunities to impact political and economic causes they care about online.

When this increased democratic voice and its attendant political influence intersect with robust digital literacy skills, there are further opportunities to organize interest groups in order to impact political and economic institutions. Therefore, social studies education can contribute to expanding the opportunities for democratic participation through digital media by explicitly teaching students how to use digital technologies for civic engagement.

Another important reason to integrate digital technology in social studies education is the growing evidence that young people prefer to engage in democratic institutions through digital technology despite lacking many of the requisite skills to do so (Bennet, 2008; Bers, 2008; Raynes-Goldie & Walker, 2008; VanFossen, 2006, Xenos & Foot, 2008). Raynes-Goldie and Walker's (2008) extensive qualitative analysis of the civic engagement preferences of youth found that students "rely on the Internet for information about causes important to them, connections to like-minded peers and organizations, and for ways to organize and mobilize" (p.170). Similarly, VanFossen (2006) found that "70% of 18-25 year olds believed political campaign information found on the internet was more useful" than other media outlets (p.26). Importantly, Raynes-Goldie & Walker (2008) argue that when students are given opportunities in the classroom to make civic connections digitally, they "make positive change in their lives and in their communities, demonstrating that the action or result of online engagement is occurring offline" (p.170).

In summary, digital technology offers new opportunities to engage in civic life. Given the growing evidence that many digital natives prefer to participate in both the

social and political spheres through digital technology, explicitly teaching students how to use digital technology for democratic participation may offer secondary social studies educators a powerful opportunity for cultivating democratic engagement in the future. Because one important predictor of the democratic engagement discussed above is a student's level of academic engagement in the high school classroom, the following section addresses the current literature on student engagement.

2.02 Student Engagement

The literature on student engagement provides a theoretical framework to inform this study's focus on the experiences and perspectives of a high school social studies class as they work with a digital text or a print text. Measuring student engagement in the K-12 classroom has become increasingly important in educational research because key engagement indicators have been consistently correlated with long-term academic success (Appleton, Christenson, Kim & Reschly, 2006; Fredricks, Blumenfeld & Paris, 2004; Fredricks, McColske, Meli, Motrosse, Mordice & Mooney, 2011; Marks, 2000). Marks (2000) concisely summarizes the prevailing belief in the literature that "students who are engaged with school are more likely to learn, to find the experience rewarding, to graduate, and to pursue higher education" (p.154). Beyond the measurable academic benefits of student engagement, Kuh's (2009) work found that student engagement is key for developing "the habits of the mind and heart that enlarge their capacity for continuous learning and personal development (p.5). Thus, educational research has focused on improving student engagement in response to the pervasive apathy or alienation from

school that characterizes up to sixty percent of high school students' experiences (Marks, 2000).

Two nuances to the research on the overwhelming climate of disengagement are particularly relevant for this research. First, the meta-analysis of the literature on engagement conducted by Fredricks, McColske, Meli, Motrosse, Mordice and Mooney (2011) found that disengagement increases as a student progresses through the K-12 system. In fact, by high school, engagement in the classroom has plummeted for many students. Second, the number of students of color that disengage and eventually dropout of high school is significantly higher than the number of white students who dropout (Fredricks, Blumenfeld & Paris, 2004; Darling-Hammond, 2010; Marks, 2000). Engaging students of color and poverty to increase their academic success is particularly relevant because the existing research on how students interact with digital technologies indicates that students find digital technology relevant to their lives regardless of their racial and ethnic or their socioeconomic background (Appleton, Christenson, Kim & Reschly, 2006; Marks, 2000; Raynes-Goldie & Walker, 2008; Reynold's & Caperton, 2011). In fact, Reynolds and Caperton's (2011) empirical research on how digital technology "mitigates gaps in public education" by increasing student access to the technological fluency they need for many types of participation outside the classroom offers evidence that students of color report higher levels of engagement with digital learning opportunities than with traditional curriculum and instruction (p.268).

Over the past decade, the literature on student engagement has come to understand engagement as a dynamic and complex interrelation of behavioral, cognitive

and emotional components (Appleton, Christenson, Kim and Reschly, 2006; Fredricks, Blumenfeld and Paris, 2004; Fredricks, McColske, Meli, Motrosse, Mordice & Mooney, 2011; Marks, 2000). Importantly, student engagement is best understood as a multi-dimensional construct because each domain of engagement tends to reinforce the other two (Appleton, Christenson, Kim and Reschly, 2006; Fredricks, Blumenfeld and Paris, 2004).

Fredricks, Blumenfeld and Paris (2004) define behavioral engagement as "effort, persistence, concentration, attention, asking questions and contributing to class discussions" (p.62). Thus, behavioral engagement is often measured through an observation of how students participate in learning (e.g., Marks, 2000). In contrast, cognitive engagement is not readily observed. Fredricks, Blumenfeld and Paris (2004) and Marks (2000) both refer to student *investment* in learning as the defining feature of cognitive engagement. Fredricks, Blumenfeld and Paris (2004) also include "thoughtfulness and willingness to exert the effort necessary to comprehend complex ideas and master difficult skills" (p.60). Emotional engagement is associated with students' experiences beyond the classroom (Appleton, Christenson, Kim and Reschly, 2006), such as extra curricular involvement in athletics or a student's sense of social belonging within their peer community. Because emotional engagement is most often observed outside the classroom, this research focuses on the constructs of behavioral engagement and cognitive engagement. Figure 2, below, provides a visual summary of each domain and the aspects of engagement that are unique to each.

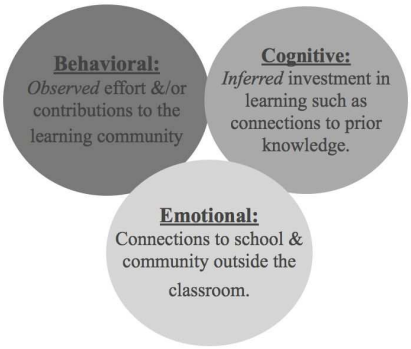

Figure 2: Three Domains of Student Engagement

2.03 Situated Learning

Laird and Kuh's (2005) finding that student use of information technology "has a strong positive relationship with an overall measurement of student engagement" and "may increase their opportunities for other types of engagement" provides an important indication that effectively integrating digital technology in the high school social studies classroom can positively influence student engagement (p.211). In particular, the digital text piloted for this research was designed to support student engagement through *situated learning.* Situated learning theory argues that the most useful classroom experiences offer students the "tools" they need to join communities of shared beliefs and practice in the United States (Brown, Collins & Duguid, 1989; Lave, 1996). In this vein, Brown, Collins and Duguid (1989) argue that when students are offered the opportunity to practice their "tools" of knowledge in a context that mimics how those tools are used outside the classroom, they are more likely to "build an increasingly rich implicit understanding of the world in which they use the tools and of the tools themselves"

(p.33). In the social studies classroom, digital technology can help situate students in online communities that intersect with their political or social interests (Bers, 2008; Bonk, 2009; Davidson & Goldberg, 2009); meet virtually with experts in relevant fields (Kim & Hannafin, 2008; Lee, 2002); and engage in collaboration and peer review that is not limited to the classroom (Bers, 2008; Bonk, 2009; Kim & Hannafin, 2008; Lee, 2002; Prensky, 2010; VanFossen, Friedman & Harsthorne, 2009).

Much of the literature reviewed here refers to the applications of digital technology as a kind of "participatory learning" that fits within the situated learning paradigm described above (Bers, 2008; Davidson & Goldberg, 2009; Kim & Hannafin, 2008; VanFossen, Friedman & Harsthorne, 2009). Davidson and Goldberg (2009) define participatory learning as "the many ways that learners (of any age) use new technologies to participate in virtual communities where they share ideas, comment on one another's projects, and plan, design, implement, advance, or simply discuss their practices, goals, and ideas together" (p.12). Davidson and Goldberg (2009) argue that because participatory learning is "socially networked" and "collaborative" it more readily allows students to "fashion workarounds when straightforward solutions to problems or learning challenges are not forthcoming" (p.30). In contrast, Davidson and Goldberg (2008) argue that traditional curriculum and instruction materials have been developed in the interest of serving an individual and high-stakes assessment model that emphasizes "competition and hierarchy, rather than cooperation, partnering and mediation" (p.30).

An important aspect of the situated learning through digital technology inferred in the examples offered in the two previous paragraphs is the increased access to both

experts and an audience beyond the classroom. For example, the digital text developed for this research intentionally integrates short film clips of a variety of experts from the field of human rights work discussing complex concepts or controversies to provide students access to multiple perspectives beyond the classroom. Students can also use digital technology to communicate with relevant people across the United States or the globe through blogs, online forums or video conferencing to discuss or debate the issues as they are developing new understandings in their social studies class. For example, some high school classes with access to the requisite technology infrastructure have set up Skype videoconferencing exchanges with adolescents in Iraq or Afghanistan in order to discuss the U.S. military commitments in each respective country. Conversations with their Afghan or Iraqi peers-- who have different perspectives on the wars in Iraq and Afghanistan than American students (and who have vested interests in U.S. foreign policy)-- have provided students with valuable insights that may well shape their own political decisions as American voters.

The opportunity to deliberate on issues with relevant people both within and beyond the context of the classroom can develop the ability for students to connect with interests groups or effectively deliberate with others on political issues that they want to impact as citizens. Thus, when students are not limited to the community of the classroom, they are provided a wider variety of choices for how to apply their learning or "situate" themselves in the world with an audience that may be more authentic than a single teacher or classroom (Bonk, 2009; Prensky, 2010). Bonk (2009) argues that this expanded audience adds relevance to the content while Prensky (2010) asserts that

students produce their best learning products when they know their work will be shared with an audience beyond the classroom. In this way, a learning environment that thoughtfully integrates digital technology "enables novices, otherwise unable to participate in the real-world experiences, to engage in authentic problems and activities while in classroom settings" (Kim & Hannafin, 2008, p.172). In short, students can participate in civic life in some of the same manners that they will participate outside the classroom.

In a similar vein, Lee (2002) and Mason, Berson, Diem, Hicks, Lee and Dralle (2000) offer examples of how situated learning intersects with digital technology to allow students to think like an historian because of their increased access to information that they can build their own interpretations from. Mason et al (2000) argue that the unprecedented access to the "raw materials of our past" provided by digital primary documents allows students to construct history more than ever before. Similarly, Lee (2002) argues that digital technology allows students to "stand side by side with professional historians generating an infinite number of interpretations" (p.508) and emphasizes that the most revolutionary benefit is the encouragement of "a view of the past that is tentative and process oriented...the nonlinear complexity supported by the Web is a means to deal more effectively with the multiple sequences, voices, outcomes and implications of historical narrative" (p.508). Offering students the opportunity to truly "write history" is one powerful example of how digital technologies open the gates to the communities of practice where students apply their new knowledge and in so doing, make learning more relevant and salient (Bonk, 2009; Bers, 2008).

2.04 Student Autonomy

Digital texts also have the capacity to bundle multimedia or multimodal content and embed multiple learning supports for differentiated learning in a single delivery package. This aspect of a digital text can support the "student autonomy" that Fredricks, Blumenfeld and Paris (2004) found increases student engagement in the classroom. For example, a single digital text can support one student's understanding of key vocabulary with an embedded dictionary and another student's enrichment opportunities with embedded interdisciplinary connections. In this way, a digital text allows students in the same classroom to choose a learning path that fits their individual needs from a variety of text, audio and visual resources.

Digital texts further support student autonomy because their software capacities provide students a greater variety of ways to create learning products than the single medium of print (Bers, 2008; Prensky, 2010). For example, digital technologies such as a digital text facilitate the flexible use of text, images and music for multimedia learning products. Bonk (2009) argues that the latest iteration of digital "Web 2.0" technologies has allowed a shift "from a culture that passively receives content" to one that "actively participates in it by adding content" (p.41). He elucidates this shift in the following statement:

> the combination of free and widely distributed educational resources with tools that enable learners to add to or comment on such resources or build entirely new ones

> begins to redefine what learning is—it becomes production or participation, not consumption and absorption (p.42).

Bers (2008) similarly characterizes “technology-rich” learning as an environment in which “learners are engaged in learning by making, creating, programming and communicating” (p.145). In short, digital texts are one example of how a digital technology can offer students a greater variety of content resources, access to relevant communities beyond the classroom for meaningful applications of their learning, and powerful tools to create multimedia learning products in a single delivery package. Figure 3, below, provides a visual summary of the integrated learning supports unique to digital texts and similar digital technologies. This visual captures the potential benefits of situated learning and student autonomy that a digital technology can provide to increase student engagement in the classroom.

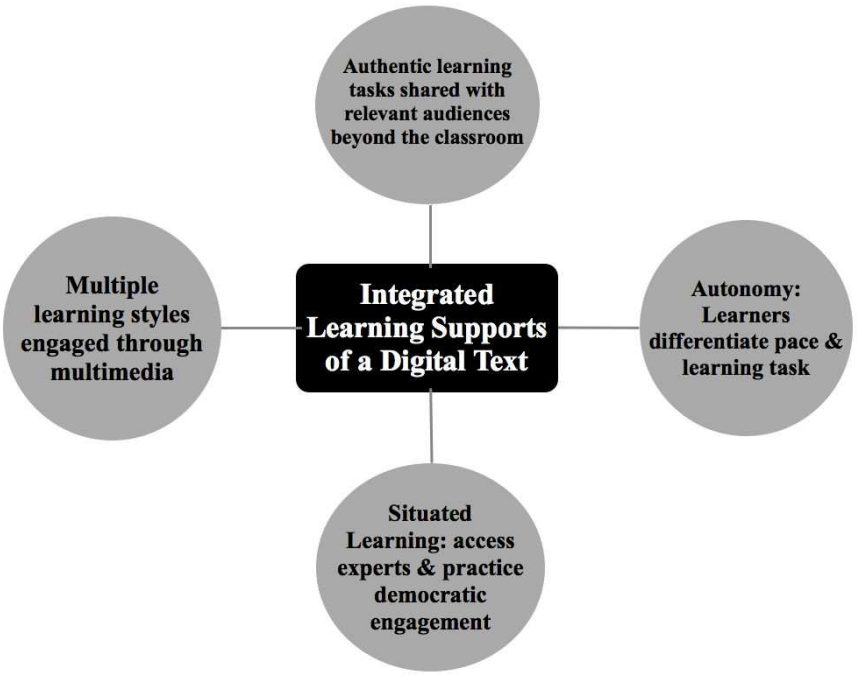

Figure 3: Unique Learning Opportunities Afforded by Digital Technologies in the Classroom

While curriculum and instruction that support situated learning and student autonomy to increase student engagement is certainly possible without digital technology, the literature reviewed here makes a compelling argument for the tremendous increase in access and ease of use provided by the data storage capacities, software applications and Internet access of digital texts and similar digital technologies (Bonk, 2009; Rose and Meyer, 2002; Prensky, 2010). In short, I believe that a digital text that thoughtfully integrates learning supports and enrichment opportunities in a single delivery package allows students to differentiate their own learning in new and powerful ways.

My argument-- that digital technology can offer the distinct advantages over a printed text described above-- is informed by my own social constructivist learning perspective. Ernst (1994) articulates the fundamental epistemological orientation of constructivist thought as the belief that "knowing is active, individual, and personal" (p.2). Using digital technology as one way to offer students situated learning opportunities and greater student autonomy implicitly honors this constructivist orientation to learning. Ernst (1994) further identifies the central metaphor of social constructivism as "*persons in conversation"* (p.8, italics in the original) inferring that human relationships can play a critical role in learning. Digital technology can support socially constructed learning through human relationships in that it offers students the chance to practice engaging in conversation and deliberation with relevant peer and expert audiences both within and beyond the classroom.

However, my argument to thoughtfully increase the role of digital technology in the classroom is tempered by an awareness of the inherent limitations of technology. In the section that follows, I explore the most significant aspect of this challenge as presented in the current literature on digital learning.

2.05 Limitations of Digital Technologies in the Classroom

Nicholas Carr (2008) is the most outspoken opponent of digital reading experiences replacing books. He argues that reading new information digitally impairs our "ability to interpret text, to make the rich mental connections that form when we read deeply" (p.91). Most significantly, he argues that reading through digital technologies does not allow for the "quiet spaces opened up by the sustained, undistracted reading of a

book" which allows us to "make our own associations, draw our own inferences and analogies, foster our own ideas" (p.94).

Carr's (2008) critique of our society's growing reliance on digital technology as the primary medium for learning is well placed insofar as it cautions us against a blind embrace of technology for its own sake. However, Carr openly acknowledges that his argument lacks empirical evidence from neurological and psychological literature that would substantiate his claims about digital technology's impacts on cognition. More importantly for the context of K-12 education, Carr's critique is undergirded by an unacknowledged assumption that most people learn best and think most deeply by reading through the printed page.

In contrast, Rose and Meyer (2002) argue persuasively against the inequity of "barriers" created when "classrooms continue to be dominated by a single medium—usually printed textbooks" because "a person who appears learning disabled in a print-bound, text-based environment may look extraordinarily skilled in a graphics or video-based environment" (p.6). They further argue that the inherently multimedia nature of digital technologies allow for "flexible methods and materials that can reach diverse learners" (p.3).

Davies, Ramsay, Lindfield and Couperthwaite (2005)'s work on a "blended approach"-- where technology enhances rather than replaces traditional classroom curriculum and instruction such as "face-to-face" learning (p.840)-- provides a compelling model for understanding the potentials for addressing the needs of diverse learners that Rose and Meyer's (2002) work calls attention to as well as the limitations

technology can pose to learning and thinking that is the focus of Carr's (2008) critique. For example, Davies, et al's (2005) empirical study of post-secondary students' overwhelmingly positive reports on their experiences learning with computer-based materials supports their conclusion that digital technologies "produce a stimulating and motivating environment" that "encourages independent learning" (p.840). Therefore, they argue that educators should focus on understanding "what technology can usefully add to or enhance, rather than replicate and replace" and conclude that "a blend of traditional and computer-based approaches" to curriculum and instruction offers the "greatest potential" for meeting all students' needs (p.840).

Digital texts that retain an emphasis on reading while also offering hyperlinked support and embedded multimedia content have the potential to harness the benefits of this blended approach by making content more accessible to diverse learners than a printed text does. The benefits to learning are especially powerful when a digital text is integrated into the context of the classroom where students have the opportunity to learn through dynamic relationships with teachers and peers. Thus, a digital text can powerfully replace the medium of the printed textbook but cannot substitute for the classroom learning community. This orientation to technology in the classroom closely parallels the aforementioned "litmus test" offered by Mason, Berson, Diem, Hicks, Lee and Dralle (2000): "Does technology allow students to learn in ways that they could not without technology, or to learn in more authentic or meaningful ways?" (In Shiveley & VanFossen, 2008, p.8).

2.06 Conclusion

My argument that digital technology should play a larger role in social studies education than it currently does is grounded in part in my strong belief that digital technology cannot produce learning by itself. Technology-- from the wheel and stone axe, to the Internet and hand-held computer-- is, and always has been, a tool for human beings to use both in their pursuit of knowledge and as they participate in their society. The literature reviewed here rests upon the assumption that digital technology is one of the most important tools for accessing new knowledge or participating in our society today. Nevertheless, technology is "merely a tool for teachers to use" (Bulpett & Friedman, 2008, p.34).

Marc Prensky's (2010) argument that "the verbs of learning are unlikely to change" hints at what I believe are the imperatives of public education today. We must embrace ever-changing technology to teach *all* students in the United States how to learn for themselves, how to innovate, how to solve problems creatively, how to collaborate with one another and how to participate in all of the political, economic, social institutions they wish to have access to (Darling-Hammond, 2010). The public education system is the only place that Americans can guarantee that all students have access to learning these skills through digital technology in order to effectively engage in our society for the rest of their lives.

The American public education system emerged in part as a response to the United States transformation from an agricultural to an industrial economy and from a

rural to an urban society (Kliebard, 2004; Ravitch, 1974). The twentieth century brought radical changes in the knowledge and skills that most Americans needed to navigate an increasingly "complex technological world" (Kliebard, 2004). In this context, John Dewey struggled to define how curriculum should be designed in order to "put children in command of the intellectual resources of their culture" (Kliebard, 2004, p.72). I believe that the current revolution in information technology presents educators in the twenty-first century with a strikingly parallel challenge. In short, offering students an "intellectual command" of their twenty-first century world will be increasingly difficult to accomplish without technological fluency and digital literacy.

I have argued that K-12 social studies students need to be explicitly taught how to translate technological fluency into democratic engagement, and the classroom is the most appropriate context for this critical learning to take place. Much of the literature reviewed here supports the belief that teaching social studies through a digital text may positively impact democratic engagement. Most importantly, providing technological fluency and digital literacy to students who lack such access at home is fundamental to providing equity in the classroom as well as a healthy democratic system in the United States. Social studies educators can offer twenty-first century students relevant curriculum and instruction by thoughtfully integrating the potential benefits of digital curriculum into the social studies classroom to teach students to think critically in a landscape of overwhelming information.

CHAPTER III:

RESEARCH DESIGN & METHODOLOGY

In the following section, I outline my research methodology and design in detail and provide explicit rationales for how this design allowed me to address my research questions. Table 1 (below) provides a brief overview of the key methodological and design elements that are discussed in detail throughout this chapter.

Table 1:

Research Methodology & Design

Research Questions:	a. In what ways, if at all, does a digital text provide high school social studies' students different affordances and academic skills than a printed text? b. How, if at all, do high school social studies students interact differently with a digital text than a printed text?
Research Paradigm:	Constructivist
Methodology:	Mixed-Methods Multiple-Case Study (4 Cases)
Primary Unit of Analysis:	Tenth-Grade World History Class
Embedded Units of Analyses:	a. 2 classroom teachers b. 118 students in World History classes
Contexts:	Print: 2 tenth-grade World History classes characterized by a print-text version of human rights unit Digital: 2 tenth-grade World History classes characterized by a digital-text version of human rights unit
Site:	Large High School in Portland Metropolitan area

Table 1:

Research Methodology & Design (Continued)

Participant Selection:	Purposeful sampling of World History Classes with similar student & teacher demographics; "replicate" (Yin, 2009) the procedures for each case
Data Collection Strategies:	a. 16 (4 per class) Classroom Observations b. 118 Student Surveys c. 16 Student Artifacts d. 2 Semi-Structured Teacher Interviews
Qualitative Data Analysis Strategies:	a. Coded student responses to open-ended survey items; analyzed data to determine emerging themes within each case; comparatively analyzed themes across cases b. Coded teacher interviews; analyzed data to determine emerging themes within each case; comparatively analyzed themes across cases c. Assessed quality of critical thinking from student artifacts with critical thinking rubric; comparatively analyzed critical thinking assessments across cases d. Coded classroom STROBE observational protocols, audio-video footage & field notes; analyzed case-by-case data to determine emerging themes within each case; comparatively analyzed themes across cases
Quantitative Data Analysis Strategies:	a. Analyzed student survey responses with contingency table & Pearson's Chi-square to determine if type of text is a reliable predictor of student experiences

3.01 Research Questions

The research questions guiding this study are: a) In what ways, if at all, does a digital text provide high school social studies' students different affordances and academic skills than a print text? and b) How, if at all, do high school social studies students interact differently with a digital text than a printed text? My use of the term *affordances* is intended to capture the complex and intersecting classroom dynamics of multiple learning styles, student perceptions of relevance, student ownership of their learning and student engagement. The academic skills relevant for this inquiry are: technological fluency, the ability to comprehend information in a text, the ability to express relevant thinking orally, and the ability to express creative or analytical thinking orally or in writing.

In order to answer these questions, I compared the experiences of two tenth-grade social studies classes working with a pilot digital text on human rights to the experiences of two tenth-grade social studies classes working with a printed-text version of the same unit. Therefore, the class is the primary unit of analysis. Several sub-research questions address the main research questions with greater depth and nuance. The sub-research questions also guided data collection on the two embedded units of analyses: the classroom teacher and individual students. The sub-research questions are displayed in Table 2 below and linked to their relevant sources of data.

Table 2:

Research Sub-Questions & Data Sources

Sub-Research Question	Data Source
a. In what ways, if at all, does a digital text support different academic skills for a high school social studies class than a printed text?	a. Classroom Observations b. Student Survey c. Student Artifacts d. Teacher Interviews
b. Does a high school social studies class perceive working with a digital text as more relevant (i.e. content or skills that can be used beyond the context of their social studies class) than working with a traditional text and if so, in what ways?	a. Student Survey
c. Does a high school social studies class perceive working with a digital text as more engaging than working with a printed text and if so, in what ways?	a. Student Survey
d. Do student artifacts reflect a difference in the quality of thinking when a social studies class works with a digital text versus a print text and if so, in what ways?	a.Student Artifacts
a. What indicators of *behavioral* and/or *cognitive* engagement are present when a class works with a print text?	a. Classroom Observations b. Student Survey c. Teacher Interviews
b. What indicators of *behavioral* and/or *cognitive* engagement are present when a class works with a digital text?	a. Classroom Observations b. Student Surveys c. Teacher Interview
c. Do teachers report a difference in support for diverse learning styles when a class works with a digital text versus a print text and if so, what evidence of this do they offer?	a. Teacher Interviews

This research is intended for an audience of high school social studies teachers, school administrators, teacher educators and social studies curriculum developers interested in the thoughtful integration of digital technology in the classroom. The

decision to focus on the classroom as the primary unit of analysis for this research was motivated by a belief I share with Rose (2011) that "remaining attuned to students' lived experience and fostering their sensitivity to the nature of that experience is essential in achieving a sound pedagogical response to emergent technologies" (p.525). An empirical understanding of the differences between how students interact with a digital text versus a print text may provide social studies educators with valuable inferences about how engagement and learning may best be supported through digital technologies.

3.02 A Constructivist Research Paradigm

A constructivist paradigm provided the most appropriate theoretical research framework for this design. Guba and Lincoln (1994) articulate a research paradigm as "the basic belief system or worldview that guides the investigator, not only in choices of method but in ontologically and epistemologically fundamental ways" (p.105). Guba and Lincoln (1994) emphasize that a researcher's choice of paradigm reflects their fundamental beliefs about "the nature of the 'world', the individual's place in it, and the range of possible relationships to that world and its parts" (p.107). Constructivism coincides with many of my beliefs about the nature of reality and how human beings experience reality, in keeping with Guba and Lincoln's understanding of the essential framework such a paradigm provides. Further, many of the most important assumptions of constructivism are embedded in the research questions posed by this inquiry. For example, I believe that an inquiry into how students interact differently with a digital versus a printed text was best addressed by collecting multiple forms of data (observations, surveys, artifacts, interviews) from multiple sources (multiple classes,

students and teachers) to capture the complexity and diversity of experience that coexist in the classroom as well as between classes. Thus, both the inquiry and the subsequent data collection strategies stemmed from an ontological assumption that reality is subjective and relative (Guba & Lincoln, 1994).

Importantly, constructivism's epistemological approach insists that knowledge is "never certifiable as true but problematic and ever changing" (Guba, 1990, p.26). Therefore, my research design built in multiple perspectives with significant triangulation of data, while acknowledging that "ever changing" knowledge is an intrinsic limitation to what can be inferred from this inquiry. However, while the constructivist paradigm acknowledges the inherently fluid nature of human knowledge and experience, it also seeks to "identify the variety of constructions that exist and bring them into as much consensus as possible" (Guba, 1990, p.26). In this vein, my use of a constructivist lens to address the research questions posed here through a multiple-case study research design offers insights into both the diversity of student interactions with each version of the text as well as a range of student and teacher perspectives within and between cases. Constructivism's emphasis on consensus, rather than certainty, further provided an appropriate lens for articulating commonalities within and between cases.

Finally, a constructivist paradigm supported a research design that valued democratic participation. Constructivism understands the researcher as a "participant and facilitator" in the process of inquiry because knowledge is "created as the investigation proceeds" with the investigator and participants playing equal roles (Guba & Lincoln, 1994, p.113). This approach is distinct from the positivist and post-positivist paradigms

that both implicitly privilege the role of the investigator as the "expert" (Guba & Lincoln, 1994). In contrast, in my role as the researcher, I explicitly addressed how student and teacher perspectives on curriculum and instruction provided the most vital expertise for improving social studies education to each of the study's participants. In summary, I believe that the research questions posed here were best addressed by data collection and analysis strategies informed by a constructivist research paradigm that enabled me to capture multiple dynamics in the complex environment of the classroom.

3.03 Research Methodology

This research inquiry relied upon both quantitative and qualitative methodologies. A qualitative approach was especially important given my interest in hearing student voices as they experienced either version of the text in the context of their high school social studies class (Creswell, 2007). A qualitative research approach also required extensive data collection from multiple sources that allowed for a more robust description and interpretation of the similarities and differences between cases that worked with a digital text and cases that work with a printed text (Creswell, 2007). A quantitative methodology was also used to collect and analyze data on a class's perceptions of their learning experiences with a digital versus a print text; academic skills supported by a digital text; and the perceived relevance of the unit. The results of this quantitative analysis further guided the subsequent collection of teacher interview data as well as the analysis of classroom observation data and student artifacts for the most triangulated approach to data collection and analysis possible.

Multiple-Case Study Research Design

This inquiry relied upon a multiple-case study approach with replication as its organizing principle to compare the experiences of two tenth-grade World History social studies classes working with the digital human rights text to the experiences of two tenth-grade World History social studies classes working with the printed text. According to Yin (2009), a case study is an "empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context" (p.18). For this design, the social studies classroom served as the primary unit of analysis while individual students and classroom teachers served as two embedded subunits of analyses. Figure 4 (below) provides a visual overview of the multiple-case design structure.

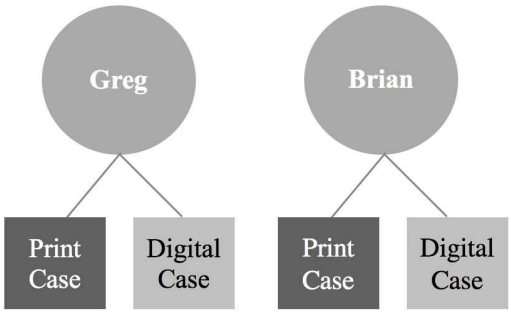

Figure 4: Comparative Structure of Multiple-Case Study Design

Yin (2009) argues that case studies are most useful for understanding "complex social phenomena" and for capturing the "holisitic and meaningful characteristics of real-

life events" (p.4). Thus, an interest in focusing on the complex dynamics of the classroom as the primary unit of analysis informed the choice of a multiple-case study design. The multiple-case study approach offered a more "robust" design than a single case study because replicating the study in four classrooms provided greater external validity and is therefore, "often considered more compelling" (Yin, 2009, p.53). Thus, the cases were carefully selected to meet the criteria for providing a "*literal replication*" of the study with each case or classroom (Yin, 2009, p.54). The decision to focus on the entire class as the unit of analysis allowed me to collect and interpret data from the classroom learning community and to compare multiple learning communities in the cross-case analysis, while the subunits of analyses provided a more refined interpretation of the experiences and interactions of the class with the print or digital text (Yin, 2009, p.52).

Case studies are often limited to one or two cases and Creswell (2007) notes that case study researchers typically select no more than four to five cases because the goal of qualitative research is depth of information. I operated from the assumption that multiple classroom dynamics such as the role of the teacher, the relationships that students share with their peers, and a student's previous experiences with learning social studies content all mediated students' experiences with and perspectives on the text. Therefore, I included four case studies and two teachers to ensure greater reliability and confidence in the "emerging themes" across multiple cases (Creswell, 2007). While by nature a case study is not generalizable (Creswell, 2007), replicating the inquiry in four different classes offered greater insights into the potential for integrating digital technology in

social studies curriculum and instruction than a comparison of two cases that shared the same teacher could have.

Finally, the multiple-case study design ensured that the digital case studies were the first World History sections taught by each respective teacher and the print case studies were comprised of subsequent sections of World History. This design decision intended to avoid a circumstance where the apparent positive experiences of the digital case studies were, in fact, more reflective of the teacher's ability to adapt later iterations of the curriculum and instruction to meet student needs identified while teaching the first section of World History. Therefore, the print case studies were kept in the most advantageous timing sequence in order to avoid falsely attributing positive student experiences and interactions to the digital text rather than an improvement in instruction.

Research Site

This research was conducted at a large suburban high school in the Portland metropolitan area where I taught social studies from 2005 to 2012. I made the decision to conduct the research in the district where I worked for seven years in order to achieve the greatest access possible for conducting thorough data collection in the field (Yin, 2009). My data collection strategies are elaborated in the following section but I will mention them briefly in order to discuss my site choice. The multiple classroom observations, student surveys, student artifacts and teacher interviews that comprise my data collection instruments all required considerable time spent in the field. Due to my experience as a classroom teacher, I knew that I would need to rely on strong and positive relationships with the participating teachers in order to be granted frequent access to their classrooms.

This study also required district and building administrative approval that was, again, greatly facilitated by my existing professional relationships at both levels.

This research decision offered my design greater feasibility while simultaneously posing two significant limitations. First, conducting research in the district where I have taught for the past seven years raised significant questions about the role of the researcher. My own participation in the organizational structure of the district informs my assumptions about what is normal in the classroom environment and could have potentially led me to disregard data that a less enmeshed researcher might find noteworthy. Inversely, my "insider" status could have influenced my interpretation of the data by encouraging me to make inferences that are only relevant for the particular context of the site.

The case study design negotiated this challenge somewhat because the goal is depth of understanding about the particular cases rather than generalizability to another context (Creswell, 2007). Additionally, the considerable time in the field that addressing my research questions required led me to prioritize the access and feasibility that working within my own district provided. Therefore, I addressed the limitations posed by my role as the researcher by asking my fellow doctoral students at Portland State to review my preliminary interpretations of the data from an "outsider" perspective and "offer alternative explanations" as Yin (2009, p.72) suggests.

Demographics

The high school site selected for this multiple-case study design is located in the metropolitan Portland area. The Oregon Department of Education reported the school's

population as 1,868 for the 2011-2012 school year (http://www.ode.state.or.us/sfda/reports/). The school is predominately white (70%) with a large and growing Latino minority population (19%) and smaller minority populations of Asian (7%) and Black (2%) students (http://www.ode.state.or.us/sfda/reports/). During the 2011-2012 school year, 28.1% of the students qualified for free and reduced lunch (http://www.ode.state.or.us/sfda/reports/).

The theoretical framework of equity (see section 1.02) guided the decision to conduct this study in tenth-grade World History classes. The larger research goal of better understanding the implications of integrating digital technologies in the classroom for students of color and students of poverty was the primary motivator for my decision to conduct this research in tenth-grade World History classes. Two demographic details are important to address for understanding the choice to pilot the unit in tenth-grade World History classes during the 2012-2013 school year.

First, this class had a larger population of students of color than all previous classes at the school site. During the 2011-2012 school year, white students made up 64.5% of the ninth grade class while students of color made up 35.5% (http://www.ode.state.or.us/sfda/reports/). Most of this additional diversity is accounted for by a more than 4.6% increase in the number of Latino students in the current tenth grade class.

Second, the unit was piloted in classes where the populations of students of color and poverty are disproportionately represented. At the selected site, World History is typically offered to tenth grade students who are not a part of the International

Baccalaureate History Program. Because the International Baccalaureate History program begins at the sophomore level, many of the school's affluent white students were not represented in World History classes. In fact, the tenth grade classes that piloted the unit were significantly more diverse than the student body as a whole. Table 3, below, provides a summary of key demographic characteristics of the student population of the four case studies while Figures 5 & 6 provide a visual summary of the case studies' racial/ethnic and linguistic compositions.

Table 3:

Demographic Characteristics of Student Population of Case Studies

	Total (N =118)
Gender [n(%)]	
Male	65 (55.1%)
Female	53 (44.9%)
Race & Ethnicity [n(%)]	
White	62 (52.5%)
Latino	36 (30.5%)
Asian	6 (5.1%)
African American	1 (0.8%)
American Indian	4 (3.4%)
Pacific Islander	6 (5.1%)
Other	3 (2.5%)
White Students v. Students of Color	
Whites	62 (52.5%)
Students of Color	56 (47.5%)
Primary Language	
English	82 (69.5%)
Spanish	26 (22%)
Other	2 (1.7%)

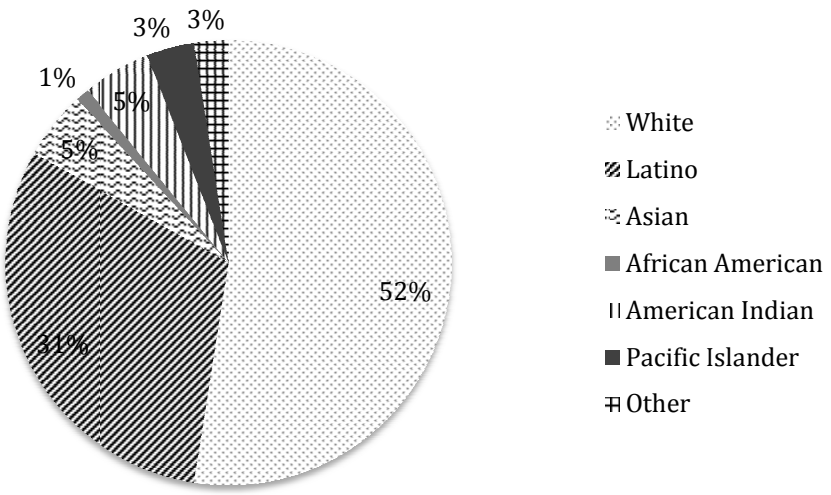

Figure 5: Race & Ethnicity of Student Population of Case Studies

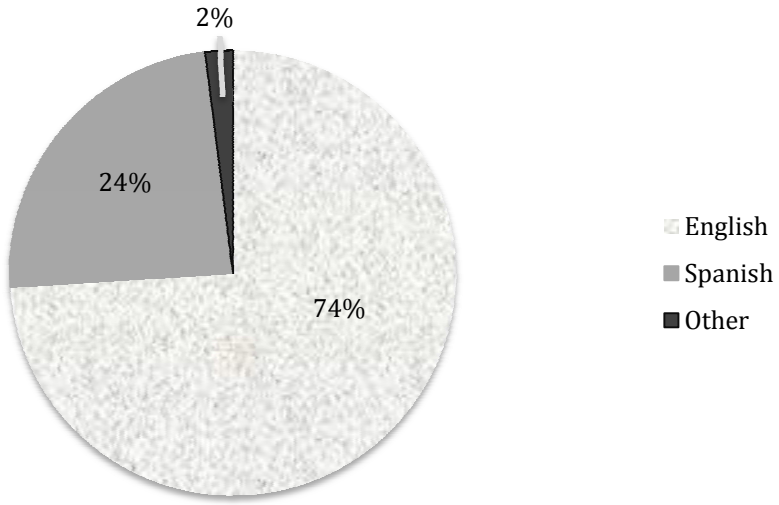

Figure 6: Primary Language Representation in Student Population of Case Studies

As the methodological choice of World History classes had anticipated, the student population of the case studies was comprised of a higher population of students of color than the school site's general student population would suggest. Although students

of color makeup 35.5% of the current sophomore class at the site, 47.5% of the case studies' student population were students of color. Students of color were predominately represented by the 30.5% Latino population of the case studies. While white students comprise 64.5% of the general population of the site's sophomore class, they represent only 52.5% of the student population of the case studies. Because the case studies exhibited similar proportions of whites and students of color, the analysis of data provided a more robust picture of the experiences of diverse students that allowed for a more reliable interpretation of the possible implications for equity of using digital technologies in the public education system, as the theoretical framing of the inquiry had intended.

The final key demographic characteristic accounted for in Table 3, above, is the primary language of the student population of the case studies. Nearly a quarter of the student population is made up of students who reported that their primary language was not English. The vast majority, or 22%, of students who reported being non-native English speakers identified Spanish as their primary language. This large minority of non-native English-speaking students was accounted for in the quantitative analysis of data to determine the influence that primary language, and its attendant culture, may exert on students' experiences of social studies, the human rights unit, and technology. In fact, primary language was found to be one of the most statistically significant predictors of a student's experience and perceptions during the quantitative data analysis. The results of this analysis, as well as its implications, are addressed in detail in section 4.04.

3.04 Development of the Digital Text

The digital text piloted in this study was developed in collaboration with the Choices Program for the Twenty-First Century. The Choices Program is a non-profit curriculum development organization affiliated with the Watson Institute for International Studies at Brown University (www.choices.edu). The team at Choices develops curricular materials that engage high school students in consideration of current and historical international policy issues (www.choices.edu). The goals of the Choices program are tightly aligned with the goals of social studies education. Their program name and its accompanying motto: "explore the past, shape the future" both capture their commitment to developing educational resources that will offer students an understanding of their critical role as decision-makers in American democracy and the world.

The pedagogical approach of Choices curricula is grounded in the social constructivist learning theory (Ernst, 1994) addressed in section 2.04. Curriculum units offer students the tools they need to build their own understanding and opinions about complex and controversial issues and to practice the types of decision-making and deliberation that they will need in order to authentically influence policy creation in the United States as democratic citizens. Thus, Choices units are designed around a framework of policy alternatives that challenge students to consider multiple perspectives (www.choices.edu).

Role of the Researcher

My decision to collaborate with the Choices Program was motivated by my use of Choices curriculum units in my high school social studies classroom over the last seven years. To my mind, no other social studies curriculum resources available for high school students are more effective in engaging students and encouraging deep thinking because they offer students detailed and nuanced explanations of a spectrum of viewpoints on controversial issues along with explicit explorations of the values that motivate diverse perspectives on a single issue. Primary resources are also carefully integrated throughout each unit to ground contrasting perspectives in quotes from relevant leading thinkers or political representatives.

The curriculum developed by Choices respects the powerful role that individual students, the classroom learning community, and the teacher all play in effective social studies education. In this vein, every unit is designed around a role-play that encourages students to simulate historical or current decision-makers as they explore policy options. Importantly, the team at Choices does not believe in making instructional decisions for classroom teachers because they believe teachers to be pedagogical experts. Instead, they seek to provide rich content designed for optimal flexibility such as historical context summaries, summaries of contrasting perspectives on an issue, relevant primary documents, relevant music and video resources or discussion prompts to provide teachers with resources to choose from in order to fit the multiple and diverse needs of their particular classroom context.

Despite the many positive contributions that Choices curricula have made to my own instruction and the potential I believe that digital Choices units hold for improving curriculum and instruction in the social studies more broadly, my relationship with the curriculum development team at Choices posed one of the most significant limitations to this study. Given my intimate involvement in the development of the digital human rights unit, I was especially attuned to my potential to bias the research by looking for positive feedback from students and teachers during the data collection and analysis phases of the research.

The Human Rights Unit

The unit piloted during this research is titled: *Competing Visions of Human Rights*. The unit addresses the following themes: What are human rights? Are human rights universal? How are human rights enforced? How does international law impact human rights? When is humanitarian intervention justified? What is the role of human rights in foreign policy? An excerpt from the printed text version of the unit is provided in Appendix A.

The unit consists of four main components. The first provides a brief history of the development of human rights in the twentieth century. The second part provides an overview of human rights in practice today by describing the role of governments in providing and protecting rights; non-governmental organizations such as the United Nations that work to promote human rights; major challenges to defining and protecting human rights; and human rights policy in the United States. The third part offers five case studies of human rights in practice. Each case study examines how a particular

human right such as freedom of expression or health is defined and protected in a different country. The fourth component provides students with four competing policy options for defining, protecting & promoting human rights that the United States could pursue. The unit includes suggestions for using the four policy options to create a classroom simulation of a decision making body such as the committee on foreign relations in the U.S. Senate.

The digital version of the unit focuses on supporting students as they read the text for the first three components. The digital learning supports included are displayed in Table 4, below. Each of these supports was designed to support multiple learning styles, differentiation and literacy based on the relevant literature discussed in chapter two of this dissertation. Importantly, the design team decided not to digitally support the simulation in order to encourage that portion of the unit to remain grounded in human interactions in the classroom. Again, this decision was informed by the belief that digital technology can significantly enhance traditional learning in the classroom but cannot replace the power or salience of learning through human relationships.

Table 4:

Digital Learning Supports

A.	Note-taking function that allows students to create margin "sticky" notes in four different colors as they read the text. These notes can be converted to a digital document that can be printed, downloaded, or shared electronically.
B.	Color-coded highlighting of the text that can be converted to a digital document that can be printed, downloaded, or shared electronically.
C.	Book-marking function that allows students to mark a page. These bookmarks can be viewed in a "Table of Contents" and students can navigate the digital unit to the pages they have bookmarked.
D.	Embedded dictionary
E.	Embedded encyclopedia to reference concepts, people or events
F.	Audio readings of the text that can be turned on/off.
G.	Embedded audio clips of all quotes from primary sources
H.	Two minute (or less) video clips of human rights scholars discussing key issues embedded where the clip is most relevant for supporting students' understanding of a challenging concept
I.	Multimedia clips of relevant music for understanding human rights from different cultural perspectives.
J.	Poems, artwork and photographs that capture the struggle for human rights from different cultural perspectives.

The decision to build a digital version of the Choices unit on human rights was the result of surveying teachers as well as engaging in considerable discussion and debate among the entire team over several months. The Choices program has nearly forty curriculum units that could have provided the foundation for building a pilot digital text. The following four questions served as our criteria: Do teachers find the unit relevant? Do teachers feel required to teach the content included in the unit? Would the content in

the unit be significantly enhanced by a digital format? Will the unit fit flexibly across multiple grades of high school social studies and multiple classes?

To initiate the decision-making process, we used past purchasing data from the Choices program to determine which units were sold in the highest volume. After creating a list of the top ten units sold, the director of professional development at Choices sent an electronic survey to teachers who had purchased more than three Choices units to determine their level of interest in each unit. The responses indicated that teachers found the human rights unit relevant and hoped to include it in their classroom. Many of the units sold in the greatest volume address an aspect of World War I, World War II and the Cold War. Teachers' responses indicated that they felt "required" by their school, district or state to teach these units. However, unlike other units sold in high volume, the human rights curriculum was not a unit that teachers felt "required" to teach. This distinction expressed by teachers who often used the Choices curriculum was important for the decision to focus on human rights for the digital unit. We wanted to build a unit that teachers felt was relevant for their classroom while avoiding content that teachers believed to be "high-stakes" in order to minimize the level of anxiety a teacher might feel about implementing a digital pilot.

3.05 Data Collection

Teacher Participants

The teachers selected to participate in this study, referred to by their respective pseudonyms of Greg & Brian, were purposefully sampled to account for differences in years of teaching experience or comfort with technology that might significantly impact how a class interacts with the digital or printed text. Both Greg and Brian had more than ten years teaching experience at the school site and between fifteen and twenty years of total teaching experience. Significantly, both teachers had also been recognized by staff at the school as well as by the district's Information Technology staff as "early-adopters" of new technology in the classroom.

The decision to conduct the case study in classrooms led by teachers with prior experiences integrating technology in the classroom was informed by the challenges many "digital immigrants" face in offering students digital learning opportunities (Prensky, 2001; Shiveley & VanFossen, 2008; Thieman, O'Brien, Lee and Hinde, 2009; VanFossen, 2000; VanFossen & Waterson, 2008) and the critical role that a teacher's attitude towards technology in the classroom plays in its integration (Ertmer, 2005). This was a necessary and appropriate design decision given that the primary focus of this research is on students and the skills they need to successfully navigate the twenty-first century. In short, accounting for a teacher's level of technological fluency and comfort with technology in the classroom allowed for a more accurate understanding of *student* interactions with and perceptions of a digital text. Finally, neither Greg or Brian had

previously taught human rights using the Choices curriculum unit. Therefore, the unit was implemented from a similar baseline of teaching familiarity and experience with the content and resources included.

Data Collection Strategies

Johnson and Christensen (2008) note that case study methodologists encourage research designs that "take an eclectic approach" to data collection by relying on "multiple methods and multiple data sources" (p.409). Therefore, I selected multiple data sources in order to effectively triangulate the data and provide a detailed picture of each case for interpretation (Creswell, 2007). Importantly, the opportunities for cross-case analysis provided by the selected design also provided significant triangulation and the attendant "confirmatory" evidence of the difference in class experiences and interactions with a digital versus a printed text (Yin, 2009, p.100).

Each data collection strategy and instrument was developed to capture meaningful differences between working with print and digital texts in the classroom. Construct validity was supported by multiple sources of evidence as well as multiple data collection formats (Yin, 2009). For the purposes of data collection, *affordances* (defined in section 3.01) was operationalized as a composite of the following: a) teachers' perceptions of the text's support of diverse learning needs as reported in teacher interviews; b) student perceptions of the unit's relevance as reported in survey responses; and c) student engagement as observed in classroom observations and reported on student surveys. Relevant academic skills were operationalized as: a) teachers' perceptions of students' technological fluency as reported in teacher interviews; b) the ability to comprehend

information in a text as observed in the classroom observations, on student artifacts and reported in teacher interviews; c) the ability to express relevant thinking orally as observed during classroom observations and reported in teacher interviews; and d) the ability to express analytical thinking in writing on student artifacts.

Instruments

Although my dissertation proposal indicated that I would conduct two classroom observations for each of the four case studies, I conducted twice as many classroom observations. My decision to conduct four observations for each case study-- a total of sixteen observations for the entire study-- was made in response to the two participating teachers' decision to spend nine class days on the human rights unit. The significant increase in number of classroom observations allowed me the opportunity to collect substantial data on the particular classroom dynamic of each case study as well as to observe numerous classroom experiences with each type of text.

Each of the first three classroom observations were ninety minutes in length while the fourth and final classroom observations were each forty-five minutes in length. The observations were conducted on days two, four, seven and eight, respectively, due to the fact that these lessons focused primarily on the text. A complete timeline of the observations is included in Appendix B as part of the research log of data collection activities. The three strategies employed to collect meaningful data during the classroom observations were 1) the use of an observational protocol 2) field notes recorded immediately following each observation to capture global trends and 3) video recordings of each classroom observation. The primary data collection instrument used was the

STROBE classroom observational protocol which was developed and validated by O'Malley, Moran, Haidet, Seidel, Schneider, Morgan, Kelly & Richard (2003). Research field notes and the video footage of classroom observations were each analyzed to determine if either source challenged or provided further confirmatory evidence of the themes that emerged from an analysis of the classroom observational protocols. Therefore, these two sources primarily served as supplemental data.

The STROBE classroom observational protocol used for data collection was developed to specifically measure student engagement by "reducing the complexity of activity in a classroom to a manageable subset of discrete behaviors" and to further, "record a representative sample of those behaviors in a manner that enables reliable information gathering, efficient data management, and effective analysis" (O'Malley, et al., 2003, p.88). An extensive field test of the STROBE instrument "provided strong evidence for validity" of its measurement of student engagement (p.86). The protocol uses repeated observation cycles to capture classroom events during timed intervals based on a recognition of the "limitations of the human observer who can attend only to a small number of visual stimuli simultaneously" (p.88). The use of an observation cycle also assumes that "recording behaviors during a period of time results in a representative sample of the behaviors of interest in the setting" (p.93). A sample of the STROBE classroom observational protocol used for data collection is provided in Appendix D.

The second data collection instrument used was a student survey that captured data on the embedded "student" subunit of analysis. I administered the survey (included in Appendix C) on the ninth day that the human rights unit was addressed in each of the

four case studies in order to encourage the reporter honesty that may have been biased if the classroom teacher administered the survey (Fredricks, McColske, Meli, Motrosse, Mordice & Mooney, 2011). Before administering the survey, I explicitly addressed the value of student experiences and perspectives for this research. I also reminded students of the voluntary nature of their participation. The survey was confidential rather than anonymous to provide the opportunity to link student survey responses with the student artifacts data collection strategy discussed below. Given this, I reassured students that their identities would not be shared publically nor would their responses be shared with their teachers or any other interested parties in a way that might clearly link their answers with their identities.

The timing of the survey's administration was intended to capture student perspectives after the maximum number of days spent working with the digital and print texts. Collecting survey data on the ninth day of the unit's implementation also provided fidelity in the replication for each case. Each case study had finished all reading and learning activities associated with the content by the ninth day of the unit and were preparing for their final writing assessment (scheduled for the following class period). This decision was informed by my assumption that a student's experience with technology is mitigated by the student's comfort with that technology.

The student survey instrument was developed to elicit individual student responses to the following components: key demographic characteristics such as gender, race or ethnicity, and primary language spoken at home; access to relevant digital technologies and student perceptions about their own technological skills and fluency;

student interest in social studies, World History and the human rights content; student's expected grade in World History; student's perceptions of the relevance of the content and skills addressed during the human rights unit; and student's expectations of future engagement in human rights issues outside of their World History class. I used the following criteria for survey validity developed by Kuh (2009) to guide the design of this instrument: information requested is known to the respondents; questions are clearly phrased; questions refer to recent activities; questions merit a thoughtful response; answering the question does not threaten the respondent (p.4). Further, Smith, Caputi and Rawstorne (2007)'s work on measuring subjective computer experience guided the design of the Likert-scale portion of the survey. Finally, Reynolds and Caperton's (2011) qualitative measures of student engagement during technology use guided the development of the four, open-ended survey questions.

This survey instrument was piloted in June of 2012 in three classes of tenth-grade students at the selected research site. Importantly, the pilot data provided no evidence of systematic error for any of the survey items. The students were also both forthright in their opinions and specific and detailed in their descriptions of key constructs such as academic skills that the survey was designed to gather information on.

The third data collection strategy drew a stratified, random sample of four student artifacts from each case study for analysis. The student artifacts analyzed for this research were created as the final written assessment of student learning on the last day of the human rights unit in each of the four case studies. Student artifacts responded to the following prompt: *What human rights policy option should the United States pursue and*

why? The quality of thought reflected in the student artifacts was assessed using the critical thinking rubric included in Appendix F.

Before analysis, all student artifacts from each case were organized into key demographic categories by the two participating teachers to ensure a stratified, random sample that equally represented both genders, as well as the racial/ethnic and linguistic diversity of the student population could be drawn. I then drew four student artifacts from each case study at random that represented each demographic category. Therefore, the total sample of student artifacts included in this data set is sixteen with men and women, students of color and white students, and native and non-native English-speakers all equally represented in each case study's sample and the aggregate sample. A sample student artifact from each case study is provided in Appendix E.

Teacher interviews comprised the final data collection strategy. The teacher interviews were conducted using Yin's (2009) suggestion that the most productive interviews for case studies are "guided conversations rather than structured queries" and "fluid rather than rigid" (p.106). The teacher interview protocol is included in Appendix H.

The teacher interviews took place in the week following the conclusion of the human rights unit in each of the teachers' respective case studies. The interviews consisted of a one-on-one conversation between researcher and participating teacher and were approximately one-hour in length. Each interview took place at a restaurant of the teacher's choice in order to encourage a conversational exchange about their experiences implementing the human rights unit over a shared meal. The interviews were audio

recorded with the teachers' permission and then transcribed, verbatim, to accurately capture all of the information given. A copy of the appropriate transcript was shared with each teacher after transcription. The teachers were encouraged to review the transcript to check for the accuracy of the representation of their perspectives. Teachers were also offered an opportunity to add or clarify any additional information they wanted to share after reviewing the transcript of their interview.

In the dissertation proposal for this research, I suggested that I would analyze data from four teacher interviews after conducting two interviews per teacher. Although a second round of interviews was completed with each teacher, the data proved problematic due to a significant change in the design of the four participating World History classes. Although the participating teachers had each maintained a print case study and a digital case for the purpose of this research design, immediately following the conclusion of the human rights unit, both teachers elected to switch all of their classes to a digital design. Therefore, the data collected from the second round of interviews no longer allowed for a rigorous comparison between print and digital models and has not been included in the findings.

Methodological Limitations

The data collection strategies used for this research pose some significant limitations. Perhaps the most important weakness in the research design is the absence of student interview data. Student survey data, especially data collected in response to the open-ended prompts, provided the most authentic capture of student experiences with and perspectives on the human rights unit in their own voices. However, this format did not

provide the opportunity to probe more deeply with follow-up questions that would have been made possible by an interview. Although the data does include further student experiences and interactions captured in the classroom observation data, the analysis of this data relies heavily upon my own interpretations. Similarly, the teacher interviews rely upon teachers' interpretations of student experiences and perspectives. Therefore, the extent to which the implications of this research accurately and holistically capture student experiences and perspectives is limited. Subsequent research could focus more specifically on collecting data through student interviews or similar strategies.

The classroom observation data also has limitations. A significant weakness of collecting data through direct observations is the possibility that the classroom dynamic was changed by the presence of an outside observer (Johnson & Christensen, 2008). However, my decision to conduct this research in a school where I am an adult with an established identity and a familiar role mitigated this reflexivity challenge to some extent because classroom visits and observations between teachers in the school are a common occurrence. Further, the decision to conduct four formal observations for each case study allowed students to become familiar with my presence in the classroom. In addition, I made several classroom visits to each case study before the formal observations and also conducted a pilot observation to check the functionality of the audio-video equipment in each case study. In short, students were provided the opportunity to grow accustomed to my presence in the classroom before data was collected for this study.

Finally, surveys may pose a challenge to validity if students have different interpretations of the meaning of the same questions (Johnson & Christensen, 2008).

Therefore, the pilot and subsequent retooling of the survey was undertaken to address areas where interpretation posed a potential threat to accurate data collection. Open-ended survey questions were also included to avoid prompting students to a particular answer and to allow students to express their experiences in written responses. Finally, I explicitly encouraged students to ask for clarification when necessary while administering the student survey. The subsequent analysis of student surveys revealed that 2%, or less, of student responses indicated students experienced trouble interpreting the survey instrument.

Ethical Considerations

The most important ethical consideration for this research design was its focus on the classroom and the participation of students who are minors and may have been both psychologically and emotionally vulnerable. My disproportionately powerful role as an adult and a known teacher at the site required that I carefully ensure students felt no coercion to participate in this research. My decision to conduct case study research in tenth-grade World History classes was guided in part by the ethical challenges raised by my role as a teacher in the district because it allowed me to avoid as much as possible including students in the study who I had previously taught or might teach in the future. This precaution was taken to minimize any pressure to participate a student may have felt due to a prior or future student-teacher relationship. Ethical considerations also informed my decision to research classrooms as the case study's primary unit of analysis rather than focus my inquiry on individual students.

The following steps were further taken to ensure that this research design was ethically conducted: a) both students and parents received a letter of informed consent that clearly articulated the data collection activities involved in the study as well as the voluntary nature of the study and the fact that student participation would have no impact on grades for the class and b) I visited all participating classes twice before beginning data collection to explain the purpose of the study to students verbally, address student questions or concerns, and assure students that they were free to decline to participate in the research at any time without impact to their grade.

Another important ethical consideration was the potential for students in World History classes that are not part of this case study to feel that they were receiving a discrepant educational experience from their peers. In order to address this potentially negative impact, I offered access to the digital unit on human rights to all World History teachers during the second semester when data was no longer being collected for this research. Several classes not included in this study did, in fact, choose to implement the digital unit that they were provided free access to.

3.06 Analyses of Data

The analyses of data relied on both quantitative and qualitative methods of analysis. The quantitative analysis of student survey data used the statistical software package SPSS to complete an analysis of association between key variables using Pearson's Chi-square. The qualitative analyses of student survey data, classroom observation data and teacher interview data used the software package HyperResearch to code each data set and subsequently analyze the coded data for emergent themes.

HyperResearch also facilitated cross-case comparisons of data. The qualitative data was initially transcribed, coded and analyzed on a case-by-case basis. Similarly, the quantitative analysis of data first determined if statistically significant associations existed between the type of text and key indicators for engagement within each case study before performing cross-case analyses of relevant associations. Figure 7, below, provides a visual summary of the approach to data analysis undertaken.

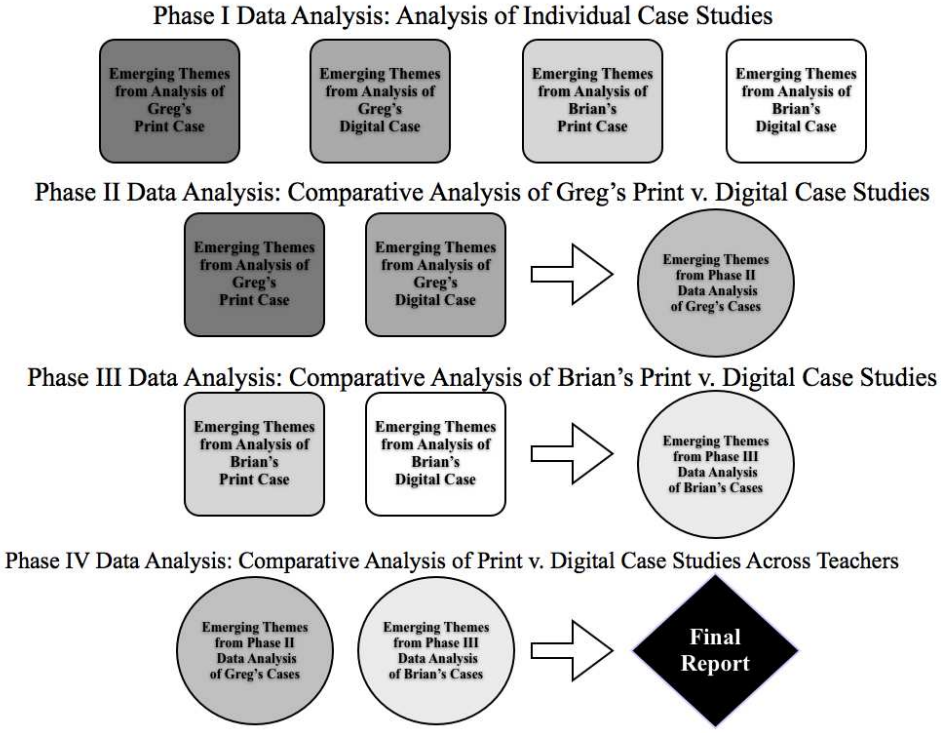

Figure 7: *Approach to Data Analysis for Multiple Case Study Design*

In the initial phase of qualitative data analysis, each of the qualitative data sets were open-coded in order to ensure that all of the existing data was analyzed without reference to the particular research questions or theoretical framework of this inquiry.

These codes were used to generate themes that offered a broad portrayal of each case study's experience with the printed or digital text. In the second part of this first phase of analysis, structural coding facilitated the identification of the emergent themes most relevant for this inquiry by case study. In the second and third phases of data analysis, cross-case comparisons of data between print and digital case studies that shared the same teacher were performed to account for the important role of the teacher in mediating the learning experience. The final phase of data analysis included a cross-case comparison of data across all four case studies. The findings from this final phase of analysis are summarized in chapter four as a comparative analysis of the persistent similarities and differences to emerge between the print and digital case studies in response to the research questions guiding this inquiry.

Quantitative Analysis of Student Survey Data

During the data analysis phase of this research study, the quantitative analysis of the student survey data was undertaken first in order to support the triangulation of data. In effect, the quantitative analysis of survey data provided a "snapshot" of important trends in the data that subsequently guided further collection of data and informed the analysis of qualitative data. For example, an initial quantitative analysis was completed immediately following the collection of student survey data and preceding the teacher interviews in October, 2012. Thus, this initial statistical analysis guided the development of the teacher interview protocol (see Appendix H) by providing a holistic overview of the data that could subsequently be probed for further teacher insights. The quantitative analysis of data was also completed in advance of the analysis of the qualitative data of

classroom observations, student artifacts or teacher interviews in order to allow the questions raised by the relevant significant associations to be probed further through the triangulation of these complimentary data sets.

A complete copy of the student survey instrument used to collect the data discussed here is included in Appendix C. The quantitative analysis of the student survey data consisted of the analysis of student responses to categorical survey items using the SPSS statistical software program. Both the independent variable (type of text) and dependent variables (indicators of student engagement) are categorical variables. Therefore, Pearson's Chi-square analysis was used to determine if the type of text (print or digital) could reliably predict a class's responses to survey items. Two portions of the survey provided the most important theoretical connections to the research questions posed here. First, eleven survey items on a four-point likert-scale addressed student enjoyment of the class and the unit; student perceptions of the relevance of the content and skills addressed; and student perceptions of the challenge of the human rights unit's content and skills. These survey items were structured to serve as proxy indicators of cognitive engagement based on the literature on student engagement (see section 2.02). Second, five dichotomous survey items addressed the likelihood of the content and skills learned during the human rights unit translating to future democratic engagement.

The quantitative analysis first tested the statistical association between student survey responses and key background demographics such as: gender, race and ethnicity, primary language spoken by the student, access to technology, student perceptions of their own technological fluency, student attitudes about social studies classes and a

student's expected grade in World History, in order to ensure that the potential impact of any of these important intervening variables was accounted for. Next, the quantitative analysis tested for any statistically significant association between student survey responses and the classroom teacher in order to account for the potentially powerful influence on student perceptions and experiences that the teacher's pedagogical style, teaching skill associated with both the human rights content and the type of text, and the teacher's rapport with students may have exerted.

A statistical analysis of student survey data most relevant to the specific research questions posed for this inquiry followed this initial analysis of the influence of important demographic characteristics. Table 5, below, summarizes the demographic composition of the two case studies that experienced the print text human rights unit versus the demographic composition of the two case studies that experienced the digital text human rights unit. An analysis of statistical association between key subgroups of students and the type of text used was also conducted to ensure that the subsequent analysis of association between type of text used and key indicators of student engagement had appropriately accounted for potentially intervening variables such as a student's primary language status or reported frequency of technology use. The composition of case studies using the print text was ascertained to be similar to the composition of the case studies using the digital text across all relevant demographic categories and no statistically significant associations were found where minor disparities occurred.

Table 5:

Demographic Characteristics by Digital Text or Print Text Context

Demographic	Print Text [n(%)]	Digital Text [n(%)]	Total [n(%)]
Gender			
Male	34 (52.3%)	31 (47.7%)	65 (55%)
Female	24 (45.3%)	29 (54.7%)	53 (45%)
Race/Ethnicity			
White Students	29 (50%)	33 (55%)	62 (52.5%)
Students of Color	29 (51%)	27 (49%)	56 (47.5%)
Primary Language			
English	40 (48.8%)	42 (51.2%)	82 (70%)
Non-Native English Speaker	18 (52.9%)	16 (47.1%)	34 (30%)
Frequent Use of Technology*			
Computer	44 (76%)	42 (71%)	86 (73%)
Laptop	39 (68%)	49 (81%)	88 (75%)
Internet	56 (96%)	58 (96%)	114 (96%)
SmartPhone	43 (74%)	40 (69%)	83 (71%)
iPod	42 (73%)	44 (73%)	86 (73%)
iPad	20 (35%)	23 (38%)	43 (36%)
Student Reports Strong Technology Skills	53 (51.5%)	50 (48.5%)	103 (87%)

* Student reports using the relevant technology on either a daily or weekly basis.

Qualitative Analysis of Student Survey Data

In addition to the thirteen categorical survey items that provided data for the quantitative analysis discussed above, the student survey instrument included four open-response items. These survey items asked students to respond in their own words to the following four prompts: 1) The most important information I learned during the human rights unit was… 2) The most important academic or school skill(s) that I practiced during the human rights unit was… 3) The best part of the human rights unit was… and

4) The worst part of the human rights unit was. Student response rates were generally high across all survey items and all four case studies with a 93% average response rate.

Student responses to each open-response survey item were first transcribed by both question and case study. These transcripts were then open-coded on a case-by-case basis using the qualitative analysis software package, HyperResearch. Following open-coding, student responses were structurally coded for potential links to the research questions posed for this inquiry. Next, emergent themes were identified within each case. The emergent themes within each case were then compared across digital and print case studies that shared the same teacher. Finally, a cross-case comparison across all four case studies was completed to identify persistent trends across cases that indicated a similar experience was provided by both types of text as well as where salient differences between the print and digital contexts emerged.

Qualitative Analysis of Classroom Observation Data

The classroom observation data was first open-coded, without reference to this inquiry's research questions or theoretical frameworks, in order to provide an accurate and holistic picture of each case study's experience with the printed or digital text without regard to how the differences may or may not have offered a qualitatively different learning experience. The analysis of classroom observation data began with the transcription of each of the sixteen observational protocols as well as the field notes recorded immediately following each classroom observation. The second phase of analysis involved the open-coding of these transcripts using the HyperResearch qualitative analysis software package. Emergent themes were identified within each case

study following open-coding. Next, both the video footage from each case's four respective classroom observations and the observational field notes were analyzed to identify any disconfirming or confirming evidence of the emergent themes that had been identified for each case study using the classroom observational protocols. Themes that were consistently confirmed across all three sources of classroom observation data were then accepted as accurate representations of a case study's experiences.

The classroom observation data was then further analyzed to identify the dominant themes to emerge within each case study that were most relevant to the research inquiry. During this phase of analysis, I returned to the definition of *behavioral engagement* drawn from the literature on student engagement (see section 2.02) to determine if, and how, the data offered evidence of a key indicator of student engagement. Fredricks, Blumenfeld and Paris (2004) define behavioral engagement as "effort, persistence, concentration, attention, asking questions and contributing to class discussions" (p.62). Marks (2000) further offers that behavioral engagement is best measured through an observation of how students *participate* in learning. Therefore, each of the dominant emergent themes, summarized in Appendix N, is indicative of an important hallmark of behavioral engagement to different degrees.

Although behavioral engagement was the primary focus of the classroom observation data, two additional indicators provided evidence of the less-readily-observed construct of cognitive engagement in the classroom observation data (Fredricks, Blumenfeld and Paris, 2004; Marks, 2000). The literature on student engagement emphasizes that when students pose academically relevant questions or make content-

related comments, they are providing strong evidence of cognitive engagement (Fredricks, Blumenfeld and Paris, 2004). Therefore, data was collected on the prevalence of academically relevant questions and comments during each observation and included in the analysis of data.

This analysis of themes within each case was followed by a cross-case analysis between the digital and print cases that shared the same teacher to determine the most salient common and diverse experiences between cases with a common teacher. Finally, a cross-case analysis of key similarities and differences between the two print case studies and the two digital case studies was performed. The dominant themes to emerge from the final phase of cross-case analysis are summarized in Appendix N. A detailed discussion of the definition of each emergent theme as well as illustrative examples of common coded data captured by each theme is also included in Appendix N.

Appendix O provides a summary of the frequency that data indicating the presence of each of the themes discussed in Appendix N was observed by case study as well as a summary of the frequency of student questions and student comments on academic content by case study. Appendix O also provides a comparison of the prevalence of each theme by print or digital context.

Qualitative Analysis of Teacher Interview Data

In the preliminary analysis phase of the teacher interview data, each teacher interview was transcribed, verbatim, from the audio recording of the interview. Following transcription, the interview data was open-coded using the qualitative research software program, HyperResearch. Once coded, the interview data was further analyzed

to identify emergent themes within each case study. Next, a cross-case analysis of the differences and similarities in emergent themes between case studies with the same teacher was conducted. Finally, a cross-case analysis comparing the dominant themes to emerge across all four case studies, as well as any compelling differences between the print and digital case studies, was undertaken.

A summary of the dominant themes that emerged from the final cross-case analysis of the teacher interview data is included in Appendix I. An illustrative example from the data is also included along with the relevant research question each emergent theme was determined to address during the analysis of data.

Qualitative Analysis of Student Artifacts

Student artifact data was first transcribed by student and by case study. Next, student artifact data within each case study was assessed according to the rubric included in Appendix F that was drawn from Northeastern Illinois University's Critical Thinking Rubric (http://www.neiu.edu/~neassess/pdf/CriThinkRoger-long.pdf). Student artifacts were analyzed in order to better understand students' abilities to: a) address the prompt b) frame an analytical argument; c) understand main ideas in a text & interpret content; and d) express creative thinking (i.e. make independent interdisciplinary or prior knowledge connections) in writing. A sample student artifact from each case study, selected to reflect a median score for the case study, is provided in Appendix E.

Student artifact data was then comparatively analyzed across case studies that shared the same teacher for notable similarities and differences. Finally, a cross-case comparison of student artifact data across all case studies was performed to determine if

persistent differences between print and digital case studies were apparent. Appendix G provides a detailed summary of how individual student artifacts scored within each case study. The average performance for each case study is also included in Appendix G to facilitate a cross-case comparison.

The following chapter offers an analytical discussion of the key findings that emerged from the final phase of data analysis for each of the complimentary data sets collected for this research. This phase included a cross-case comparison of data to identify the persistent similarities and differences between the print and digital case studies that are most relevant for the research questions guiding this inquiry.

CHAPTER IV

FINDINGS

The analysis of data offered strong evidence that a digital text supports unique and important academic skills that are not equivalently supported by the print text, as well as several important differences in how high school social studies students interact with a digital versus a print text. The analysis of data also offered some valuable inferences about how the use of digital technologies in the public education system may support greater equity for students of color and students of poverty. To begin, Table 6, below, provides an overview of the most important affordances provided by a digital text along with the relevant sources of data that support each finding while Table 7 provides an overview of the compelling differences in how students interacted with a digital text as well as the relevant sources of data. Finally, Table 8 summarizes the most important findings about the experiences of students of color relevant to the research questions.

Table 6:

Findings from the Data That Inform the Research Question: In what ways, if at all, does a digital text provide high school social studies students different affordances and academic skills than a printed text?

Key Finding	Source(s) of Data
A. The digital text supported unique academic skills such as **technological fluency** and the creation of more **sophisticated learning products.**	• Classroom Observations • Student Survey • Teacher Interviews
B. The digital text provided students additional support for the **reading** experience.	• Classroom Observations • Student Survey • Teacher Interviews
C. The digital text provided more opportunities for **differentiation** and greater support for diverse learning styles.	• Teacher Interviews

Table 7:

Findings from the Data that Inform the Research Question: How, if at all, do high school social studies students interact differently with a digital text from a printed text?

Key Finding	Source(s) of Data
A. Students were more ***cognitively*** **engaged** in the digital case studies on the following indicators: a) perceived relevance of the content & skills and b) frequency of content-specific comments	• Classroom Observations • Student Survey • Teacher Interviews
B. Students were more ***behaviorally*** **engaged** in the digital case studies on the following indicators: a) observed effort or investment in learning & b) peer-to-peer collaborative learning	• Classroom Observations • Teacher Interviews
C. Students in the print case studies were more likely to exhibit strong indicators of ***disengagement*** than students in the digital case studies.	• Classroom Observations
D. Students in the digital case studies experienced a **shift from** understanding **technology as a recreational tool to** understanding **technology as an academic tool**.	• Student Survey • Teacher Interviews
F. Teachers were often frustrated by the new **classroom management challenges** manifested in their digital case studies.	• Teacher Interviews
G. The digital text required a much **more** significant investment of **classroom time**.	• Classroom Observations • Teacher Interviews

Table 8:

Summary of Findings Addressing the Experience of Students of Color

Key Finding	Data Source(s)
A. Students of color and white students had strikingly similar experiences of both the unique academic challenges and the unique benefits of the digital text	a. Student Survey Data b. Classroom Observation Data
B. English Language Learners benefited from the multimedia learning supports embedded in the digital text	a. Classroom Observation Data

The following chapter offers an extensive discussion of each of the academic affordances and differences in student interactions displayed in Tables 6 and 7, above. These findings are briefly summarized here to provide an overview of the discussion to follow. Student survey data, teacher interview data and classroom observation data all provided evidence of a few unique affordances supported by a digital text. Technological fluency, the creation of more sophisticated learning products and differentiation for multiple learning styles were the most persistent affordances provided by a digital text to emerge in the analysis of data. The teacher interview data and the student survey data both also offered evidence that the digital text provided students additional support for the reading experience.

The analysis of data suggested several key differences in how students interacted with a digital and a print text. The student survey data, teacher interview data and classroom observation data all indicated that students were more cognitively and behaviorally engaged in the digital case studies based on the following indicators: 1) perceived relevance of the content and skills; 2) frequency of content-specific comments offered by students; 3) observed effort or investment in learning; and 4) peer-to-peer collaborative learning. In a related finding, classroom observation data provided evidence that students in the print case studies were more likely to exhibit strong indicators of disengagement than students in the digital case studies.

Despite the apparent academic benefits and support for student engagement of a digital text implied by these results, the analysis of data also offered a picture of consistent challenges and some obstacles to learning posed by the use of a digital text.

Both the student survey data and the teacher interview data provided substantial evidence that students and teachers experienced the digital text as a more challenging, and often frustrating, learning experience. Students in the digital case studies were somewhat unenthusiastic about using technology for academic purposes instead of the recreational pursuits they had most often used technology for previously. In parallel, teachers were often frustrated by new classroom management challenges manifested in their digital case studies. These struggles are related to one of the strongest themes to emerge from a cross-case analysis of the teacher interview data and the classroom observation data: the use of the digital text required a much more significant investment of class time than the use of the print text.

In addition to the evidence of clear differences in the experiences of the print and digital case studies articulated briefly above, the analysis of data also provided important indications that no discernible differences existed between the experience of working with a print text and the experience of working with a digital text in several aspects. For example, the analysis of student artifacts offered no indication that the type of text influenced students' ability to communicate their thinking in analytical writing. In contrast, this data strongly suggested that a teacher's ability to offer appropriately supportive instruction during the writing process was far more impactful than the type of text used. Similarly, the student survey data indicated that students summarized the human rights content in strikingly similar terms regardless of the type of text used. Finally, the classroom observation data did not provide compelling evidence that the type

of text influenced how students engaged with the task of reading or posed questions about the content.

Despite much evidence of the digital text posing significant new challenges for students and teachers alike, as well as some clear indications that the type of text was not influential, both the student survey data and the teacher interview data demonstrated that students in the digital case studies would like to continue working with a digital text. This preference was also shared by teachers and strongly conveyed in the teacher interview data. Thus, the overall picture provided by the data suggests that the digital experience was both more challenging and more rewarding for the participants in this research study. The discussion that follows highlights the most important evidence that demonstrated how a digital text provided each of the key academic affordances and differences in student interactions that emerged from the analysis of the multiple data sets.

4.01 Unique Academic Affordances

Technological Fluency

Perhaps the most evident academic affordance provided by a digital text was the development of technological fluency. The benefits of the increased opportunities for students in the digital case studies to hone their technology skills was apparent in the student survey data as well as the classroom observation data and the teacher interview data. Most strikingly, the qualitative analysis of student survey data revealed that an average of 20% of student responses made specific reference to technology skills as the most important academic skill practiced. This trend was slightly higher in Greg' digital

case study with 23% of students making reference to either the digital text or the iPad platform versus 17% of students in Brian's digital case study. Nevertheless, the persistence of this response pattern indicated that many students perceived the technology skills developed while using the digital text to be relevant. Given the close relationship between perceptions of relevance and cognitive engagement discussed previously in section 2.02, this data further suggests that the digital text supported cognitive engagement in tandem with the opportunity to practice technology skills.

Similarly, the qualitative analysis of student survey data for the open-ended prompt about "the best part of the human rights unit" indicated that students perceived the opportunity to practice technology skills as relevant and engaging. For example, 45% of students in Greg's digital case study described some aspect of the digital text as the "best" part of their experience with the human rights unit. While Brian's digital case study had a less robust rate of reference to the digital text, 24%-- or nearly a quarter-- of student responses, also referenced the digital text as the "best" part of their experience. The following examples capture the references to the digital text most common to both digital case studies: "learning how to use the iPad as a textbook, notebook and computer" and "iPads made work easier & more fun." The reality that over one-third of the student population of the digital case studies cited the ability to learn new skills with the digital text as the most positive aspect of their experience not only provides evidence of the technological fluency supported by the digital text. This evidence further supports an interpretation of gaining technological fluency with the digital text as a consistently engaging learning experience.

The classroom observation data also provided clear indications that the digital text supported the development of new technology skills in the classroom. For example, students were often observed exhibiting technology skills that had been explicitly addressed by their teacher such as accessing the multimedia content embedded in the digital text. During the third and fourth classroom observations, students were frequently observed declining the technical support offered by their teacher because they had developed greater technical comfort after only a few days of working with the digital text. Importantly, the frequency with which this theme was manifested across digital case studies was strikingly consistent. For example, both digital case studies had fourteen different observed instances of students demonstrating increasing technological fluency in the coded observation data.

Finally, the teacher interview data also provided compelling evidence that the digital text supported increased technological fluency. Broadly, both teachers characterized the technology skills required to navigate the digital text as adding a layer of complexity to student learning. Greg offered the apt analogy of students "learning to ride a bike at the same time they're trying to think about the United Nations" to capture the challenge of learning technology skills and content simultaneously.

However, the teachers also qualified the additional challenges presented by the digital text as an important benefit for students. Most significantly, when explicitly asked if the requisite technology skills created a barrier to understanding the human rights content for the digital case studies, both teachers unequivocally refuted the idea. Brian was most adamant in his response to the notion that the technology posed an obstacle to

learning. He assessed the positive impact of the skills offered by the digital experience in the following terms:

> They're struggling with the technology but think how many jobs we have where we have to figure out [technology]….we have to prepare these kids to go out and make a living in the real world and we want most of them to be able to do it in a professional sense. The reality is that they're going to have to be very flexible and fluid in the way they engage with technology and very comfortable with 'OK, I'm learning this. How do you learn it?' And a lot of how you learn these things is you play with them. So we give them opportunities to say, 'What do you? How do I?' I think that's good.

Throughout their respective interviews, both teachers made numerous similar references to the technological fluency gained through the use of the digital text as a long-term academic advantage for students.

More Sophisticated Learning Products

The creation of more sophisticated learning products was another important, and related, academic affordance supported by the digital text. In addition, both the classroom observation data and the teacher interview data offered evidence of cognitive engagement supported by the digital creation process. For example, when students worked in groups and used the digital text to create learning products that reflected their understanding of the human rights content, the verbal and nonverbal expression of enthusiasm related to the learning process as well as the number and quality of student interactions with an academic purpose (i.e. debating complex ideas or demonstrating

academic skills for one another) were quite noticeably higher in the digital case studies. Such collaborative and energetic classroom dynamics were noteworthy on multiple observation days in both of the digital case studies.

The analysis of teacher interview data offered triangulating evidence for this finding. Brian's descriptions of the key differences in academic experiences between his digital and print case studies focused extensively on the process of creating learning products using the text. When students created summaries of content they had read, Brian felt the digital case study was "more engaged" and the process was "significantly better." In contrast, Brian asserted that the "the product is awful and the process is bad" in the print context. Brian described the process in the print case study as one where only "one or two kids" in a group are engaged. In contrast, he characterized creating digital learning products as "more interesting and exciting" for students because "they're engaging the world in the way that they know how to engage it." Greg also referred to the unique affordance provided when students worked digitally on "creative projects"—although less extensively than Brian. Greg explained that the digital environment was noticeably better because students could "do their own artwork, make their own music….create all kinds of stuff."

The assertion by both participating teachers that the process of creating learning products was qualitatively better in the digital case studies closely parallels an argument in the literature on digital learning advanced by Herring (2008) that the practice of "bricolage" or the integration of "diverse bits of content and communication" using digital media "crucially involves cognitive processes of selection and judgment" that are

quite valuable for students. Both teachers inferred that just such higher-order thinking was more noticeably at work when students used the multimodal affordance of the digital text and iPad to demonstrate their understanding of the human rights content.

The analysis of teacher interview data further inferred that the digital experience supported a more cognitively engaging learning process. In this vein, Brian described the digital experience as one where students "have to really engage the material in a way they haven't in the past" and added that working digitally "takes more time" but is "a much better experience." Greg echoed a similar sentiment with his belief that the work the digital case study engaged with "was more valuable." Although largely reliant on inferential evidence, both teachers identified the thinking required to create digital learning products as more complex and the products as more sophisticated. In this way, their descriptions of the learning processes at work in the digital case studies are quite similar to the "bricolage" that Herring (2008) believes to be one of the clearest indication of critical thinking in the digital environment. In short, the classroom observation data and the teacher interview data offered clear indications that both a qualitatively better creation process and learning product were afforded by the digital text.

The Reading Experience

The student survey data and the teacher interview data each suggested that the digital text offered students some additional support for the reading experience. Students provided the strongest evidence that the digital experience afforded a qualitatively better reading experience in the open-response survey data. The qualitative analysis of responses for the open-ended survey question that prompted students to describe the

"worst part of the unit" indicated that a majority of students in both the print and digital case studies perceived the academic skills required during the unit to be the "worst" aspect of their experience. Students commonly referenced: "writing a paper"; "reading"; or "taking notes" as their most negative experiences.

Importantly, although the struggle with fundamental academic skills was clearly present in all four of the case studies, the students in the print case studies reported these academic challenges to be the "worst" part of the unit at considerably higher rates than students in the digital case studies. For example, 44% of Greg's print case study reported challenging academic skills to be the worst part of the unit versus nearly half that, or 24%, of Greg's digital case study. Strikingly, Greg's print case study also made four times as many references to the reading of the content as their specific area of struggle. In a parallel pattern, 50% of Brian's print case study reported challenging academic skills to be the worst part of the unit versus only 28% of Brian's digital case study. Similarly, Brian's print case study made more than twice as many references to the reading as the specific area of challenge experienced. This data may provide an important indication that despite the initial hurdle of acquiring new technology skills posed by the use of a digital text, the experience of reading the content with the digital text was more positive for students, or, at the very least, less likely to be perceived as the "worst" part of their learning experience.

Additionally, teacher interview data provided some modest indications that the digital text supported a better reading experience for students. Many of Greg's reflections on the differences in academic experiences between his print and digital case

studies focused on the reading experience. Most importantly, Greg felt that the digital text "seemed to help the kids stay more engaged with the reading task." Although Brian did not focus on the reading experience for either the digital or print case studies during his interview, the English Language Learner (ELL) specialist who worked in his classroom provided a parallel perspective to Greg's. The ELL specialist offered individualized academic support to students with very limited English language proficiency in Brian's World History classes. During one classroom observation, she offered her unprompted opinion that the digital text's enhanced multimedia features provided ELL students much greater access to understanding the human rights content while reading than the traditional print text.

One final noteworthy perspective on the digital reading experience emerged from Greg's teacher interview. In addition to his belief that the digital text offered a more engaging reading experience, Greg implied that the digital text sometimes distracted students from learning the human rights content. He described the distraction in this way: "They can go here or they could go there and oh, they can touch this, and so, sometimes you just want them to focus on the written content." When asked to explain more about how he had simultaneously characterized the digital text as a better reading experience and as a more distracted reading experience, Greg attributed the apparent contradiction to his sense that he had not "quite figured out how to teach the reading with the digitally integrated book." Greg felt that he needed to develop more of an "explore-at-your-own-pace approach" to reading instruction than he currently used in order to take greater advantage of the increased engagement he believed the digital text afforded

students. Greg's insight seemed to imply that if he were able to pair the digital text with instructional strategies that allowed his students greater autonomy in the reading experience, the digital reading experience would be even more powerful than he had initially noted.

Differentiation

The final academic affordance of the digital text evident in the analysis of data was greater support for differentiation. The data supporting this affordance was isolated to one of the teacher interviews and thus, the evidence is less robust than that provided for the affordances of technological fluency, sophisticated learning products and a better reading experience. Brian explicitly offered that the digital text allowed him "ways to differentiate more effectively" with his students. He also emphasized that the digital text offered "many different avenues for exploration and play" and characterized the digital experience as "drawing in" diverse learners such as "the kid who's really technical and likes to read or the gal who's really artistic." More explicitly, Brian argued that the digital text "allows you ways to differentiate more effectively." Although the digital text's support for differentiation was not broadly apparent in the data analysis, the evidence offered in Brian's interview is noteworthy insofar as it very closely parallels the prevalent theoretical argument in the literature on digital learning that multimodal experiences are inherently supportive of the multiple learning styles that diverse students bring to the classroom (Berson and Balyta, 2004; Rose and Meyer, 2002).

4.02 Differences in Interactions with a Digital Text

Cognitive Engagement

In addition to the unique academic affordances provided by the digital text, the analysis of data provided numerous indications that students often interacted differently with the digital text than the print text. Most importantly, the student survey data, the classroom observation data and the teacher interview data all provided substantial evidence that the digital text provided a more *cognitively engaging* experience for students. To begin, Figure 8, below, offers a graphic snapshot of the frequencies with which each case study reported positively for the enjoyment of technology use in class and the usefulness of the information learned beyond the classroom as indicators of cognitive engagement in the student survey data. Table 9, below, displays the results of the Chi-square quantitative analysis of statistical associations between the type of text used and these two indicators. A complete table summary of how students responded to all survey items is also included in Appendix M.

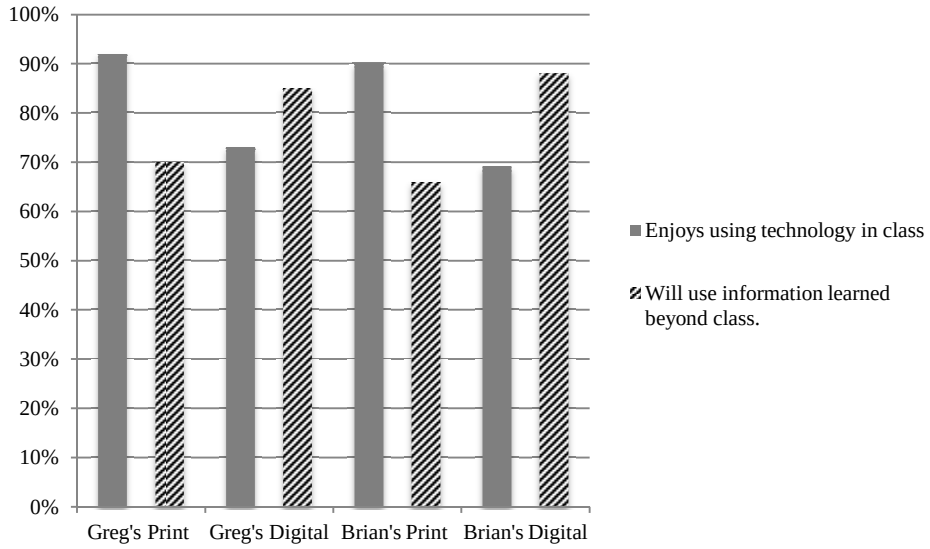

Figure 8: Indicators of Cognitive Engagement by Case Study

Table 9:

Indicators of Student Engagement by Digital Text & Print Text Contexts

	Greg's Print Case Study n=33	**Greg's Digital Case Study N=27**	**Brian's Print Case Study n=30**	**Greg's Digital Case Study n=26**
Enjoyed using technology in class.	25 (92%)	24 (73%)*	27 (90%)	18 (69%)*
Will use the information learned outside of class.	19 (70%)	28 (85%)	20 (66%)	23 (88%)

*$p < 0.05$ for Chi-square Statistical Analysis of Strength of Association

First, and most powerfully, the quantitative analysis of student survey data revealed that a statistically significant association existed between the type of text used and how students reported their enjoyment of using technology in class. Strikingly, across the digital case studies for both teachers, students reported that they did *not* enjoy

using technology in class at much higher levels than students in the print case studies. The negative association between the use of a digital text and reported enjoyment of using technologies in class was significant at the level of $p < 0.044$. Students in the digital case studies reported enjoying using technologies in class at a 20% lower rate, on average, than students in the print case studies, who reported enjoying using technologies in class at rates of 90% or above.

At first glance, this finding seems to contradict the prevailing wisdom of digital learning enthusiasts who advocate for integrating digital technologies in the classroom to increase student enjoyment in the hopes of also increasing student engagement. Therefore, the relationship between student enjoyment of technologies in the classroom and the type of text used was a primary focus of the teacher interview protocol in order to further understand the inverse relationship between the use of technology and the enjoyment of technology revealed by this quantitative analysis.

The most relevant theme to emerge from an analysis of teacher interview data was a connection between the additional academic rigor posed by the cognitive and technical skills required by the use of the digital text and lowered student reports of enjoying the use of technology in the classroom. Both teachers inferred that students struggled with the academic challenges posed by using a digital text in ways that encouraged student engagement rather than diminished engagement. Viewed from this vantage point, the *negative* influence that the use of a digital text exerts on student enjoyment of technology may well be a *positive* indicator of cognitive engagement. The association between the

type of text and student perceptions of the relevance of the content and skills learned during the unit provided further confirmatory evidence for this interpretation of the data.

The association between the type of text used and a student's perception of the applicability of the information learned during the unit outside of class exhibited an association at the level of $p < 0.066$, just above the accepted threshold for significance of $p < 0.05$, across case studies. Eighty-five percent of Greg's digital case study reported finding the information relevant and useful beyond the classroom versus just 70% of students in Greg's print case study. A parallel, and more prominent, disparity in reported relevance and usefulness of the information learned existed between Brian's classes. Eighty-eight percent of students in Brian's digital case study reported finding the information relevant and applicable versus only 66% of Brian's print case study. This finding supports an interpretation of the digital experience as one that students perceive to be more challenging as well as more relevant and transferable to multiple contexts.

The higher rates at which students in the digital case studies reported finding the human rights content relevant and applicable to their life outside the social studies classroom offers some of the strongest evidence that students were more cognitively engaged by the use of the digital text than students were by the print text. This finding is especially valuable for educators interested in how a digital text might support engagement in the classroom given that Fredricks, Blumenfeld and Paris (2004) and Marks (2000) emphasize that student "investment" in learning is the definitive indicator of cognitive engagement and students are more likely to invest themselves in learning that they find personally relevant.

Once again, the results of the open-ended student survey prompt on "the best part of the human rights unit" offers compelling corroborating evidence of the cognitive engagement supported by the digital text. The high rate of references to the digital text by both digital case studies, discussed previously in section 4.01, further confirms that many students perceived the digital text to be an engaging learning experience. This qualitative data offers a more complex picture of student experiences with the digital text than the responses for the quantitative portion of the survey could provide on its own. While students in the digital case studies reported enjoying the use of technology in class at significantly lower rates than their counterparts in the print case studies, over one-third of students in the digital case studies made specific references to their enjoyment of the digital text during the unit. Taken together with the interpretation of the technology as challenging but engaging offered in the teacher interview data, these results again seem to indicate that students both struggle with and appreciate the new challenges posed by learning to use a digital text in their social studies class.

Finally, the classroom observation data suggested that the digital text supported a more cognitively engaging experience in one critical aspect. Fredricks, Blumenfeld, and Paris (2004) argue that when students offer content-related comments without being prompted to do so, they are providing strong evidence of cognitive engagement. Students initiated comments on academic content 20% more often in the digital case studies than in the print case studies. Table 10, below, summarizes the prevalence of student-initiated comments on academic content by case study. This indicator of student engagement signals demonstrably higher levels of participation in their own learning exhibited by

students in the digital case studies in this particular aspect. Importantly, this difference further provides some evidence that the digital text may have contributed to a qualitatively better learning experience than the print text.

Table 10:

Prevalence of Student-Initiated Comments on Academic Content by Case Study

Theme	Greg's Digital Case	Greg's Print Case	Brian's Digital Case	Brian's Print Case	Digital Case Frequency	Print Case Frequency
Student Comments	14	0	82	63	60%	40%

Behavioral Engagement

The analysis of classroom observation data revealed that students were more behaviorally engaged in the digital case studies on the following indicators: a) observed effort or investment in learning and b) peer-to-peer collaborative learning. Both the theme of "effort or investment" and the theme of "collaborative learning" were 34% more frequent in the digital case studies than the print case studies. Table 11, below, displays the prevalence of each of these themes by case study. Additionally, a table summarizing all of the themes that emerged from the qualitative analysis of classroom observation data is included in Appendix N.

Table 11:

Frequency of Behavioral Engagement Indicators from Classroom Observation Data by Case Study

Theme	Greg's Digital Case	Greg's Print Case	Brian's Digital Case	Brian's Print Case	Digital Case Frequency	Print Case Frequency
Collaborative Learning	23	15	13	3	67%	33%
Effort or Investment	21	8	21	13	67%	33%

The theme of "collaborative learning" emerged from coded data that demonstrated students working closely with their peers to build their academic skills or content knowledge. Some characteristic examples of behaviors that were analyzed as exhibiting "collaborative learning" are: 1) a student posing an analytical question about the human rights content to their peer(s); 2) students debating differences in their opinions on content with one another without being prompted to do so by their teacher; 3) a student demonstrating how to perform an academic skill for their peer(s) such as identifying the main idea in a text; or 4) a student demonstrating how to perform a technical skill such as toggling between multiple software programs on the iPad. Examples of coded behavior that demonstrated the theme of "effort or investment" included the enthusiastic expression of body language in addition to contextually appropriate body language (i.e. verbally expressed cheers or disappointment; hand-

raising in response to teacher or peer prompting) as well as behavior such as remaining after a class had ended to continue to discuss content with the teacher and/or peers.

The increased prevalence of "collaborative learning" and "effort or investment" observed in the digital case studies indicated the presence of two important constructs that Fredricks, Blumenfeld & Paris (2004) argue consistently increase student engagement: authenticity of learning task and student autonomy. As noted previously in section 2.03, in the high school social studies classroom, authentic learning tasks give students the opportunity to practice democratic participation, as when students were observed debating complex issues. Similarly, instances where students were either observed participating in their own learning by requesting that their peers demonstrate technical or academic skills for them, or by deliberating with a peer group without being prompted to do so, provide strong evidence that the autonomy (discussed in section 2.04) that Fredricks, Blumenfeld & Paris (2004) believe to be a hallmark of engagement was at work in the case study. Thus, the increased prevalence of such observed behaviors in both digital case studies was an indication that the digital text was supporting a more engaging learning experience for students.

The teacher interview data further indicated that both teachers observed students to be behaviorally engaged in learning digitally. Student engagement was most clearly inferred when each teacher was asked to reflect on how students in their digital case study might respond to returning to a classroom environment that no longer integrated digital texts or the iPads. Perhaps surprisingly given the significantly lower rates at which students in the digital case studies reported enjoying using technology in the

classroom in the quantitative student survey data, both teachers were unhesitating in their belief that students would be disappointed to lose access to the digital learning environment. Brian summarized this complex student attitude to new technology in the following terms:

> After a certain amount of time, the kids totally want the technology because it does make a lot of things simpler….there's a lot more you can do with technology. There's a larger universe you can expose them to in social studies. But the actual use of [technology] is tricky.

Greg described a similar understanding of his students' experience in the following assertion: "They may be frustrated but they understand that we're trying something…they recognize that [working in print] would be taking a step back….they would be a little bit disappointed." This belief that students would prefer to work digitally, expressed in quite similar terms by both teachers, infers that the teachers also perceived students to be engaged by the digital experience in ways that benefited student learning.

Shifting Attitudes Towards Technology

In a related finding, one of the richest articulations of student attitudes about using new technology to emerge in both teacher interviews was a description of students as experiencing a complex and, at times, contradictory shift from understanding technology as a "toy" or a "recreational device" to understanding technology as a tool to use for academic work. For example, Brian contrasted the prevalent attitude toward the digital text and iPad in his print case study of, "I want to try that toy" with his digital case

study's challenge to understand, "how do I actually use it?" Similarly, Brian felt that his print case study assumed the digital text was "highly exciting, attractive and sexy" while his digital case study expressed frustration with the sharp learning curve they experienced when working with the digital text. To this end, Brian noted that in his digital case study, "the students have a whole new routine" to learn and practice and therefore, "some element of struggling with the tech skills" was apparent to him.

Greg described a parallel dynamic at work in his case studies. He felt most students approached new technology with the assumption that "it's a recreational device" and "associat[ed] with relaxing." Greg described students in his digital case study as experiencing a notable shift in this initial attitude "when it becomes a work device." Greg also believed that, at times, students felt daunted by the "extra steps involved" in using the digital text. Nevertheless, Greg was quite clear that most of his students preferred the digital experience despite these extra steps.

In short, the teacher interview data offered substantial evidence that the learning experience provided by the digital text was worthwhile despite the significant challenges and frustrations it posed for students. Both this shift in student attitudes noted by teachers, and the previously discussed, frequent references to the digital text as the "best part of the unit" on the student survey, further elucidate the apparent contradiction in the significantly lower levels at which the digital case studies reported enjoying technology and the perception that students preferred to work digitally. These data support an understanding of students as struggling with the academic applications of digital technology while also beneficially engaged by the struggle.

Classroom Management Challenges Increased in the Digital Case Studies

In sharp contrast to the cognitive and behavioral engagement supported by the digital text, both the classroom observation data and the teacher interview data provided substantial evidence that classroom management was a far more significant challenge in the digital case studies than the print case studies. In the qualitative analysis of classroom observation data, the emergent theme of "classroom management challenges" designated instances where students appeared distracted from learning by the presence of the digital text and the iPad technology. Additionally, this theme included behavior that was often difficult for the teacher to be aware of and address due to the nature of digital technology.

One commonly observed behavior that fit within the theme of "classroom management challenges" was the use of unrelated applications on the iPad, such as the camera function, at times when students were supposed to be engaged with reading the digital text or creating a learning product. Another frequent example of "classroom management challenges" posed by the specific capabilities of a digital text was students engaged in reading websites that were unrelated to the human rights content or their World History class such as ESPN.com. This behavior is an example of a challenge that was unique to the digital learning environment because students who were reading unrelated websites often appeared to be reading the digital text. The nature of the unrelated content could only be observed at very close physical proximity.

In parallel, the teacher interview data revealed that both teachers were frustrated by the significant classroom management challenges posed by the digital text, despite their previously noted enthusiasm for its unique academic affordances and capacity to

engage students. This key difference in the digital and print experiences was especially striking in that, as veteran teachers-- with more than fifteen years of classroom experience, respectively-- both teachers expressed surprise at the persistence of the classroom management issues they experienced as they integrated the digital text and iPad

In describing his struggle with new classroom management challenges, Brian made numerous references to how his classroom management approach became appreciably more "controlling" in his digital case study. Brian recounted his realization that he had "made a very bad assumption" about his ability to address potential classroom management issues before integrating the digital text because "these things are gateways." Further, he expressed surprise at having to "really heavily monitor….far more than you would in a typical class" his digital case study in order to prevent students from "[taking] off and running in the digital landscape."

Much like Brian, Greg expressed a need to change his classroom management style when the digital case study failed to meet his initial assumption that he would be able to appropriately manage the use of iPads in the classroom. He acknowledged that his approach to the digital case study had, at first, been: "I don't want to take away most of the capabilities of this digital device" but quickly became much more restrictive. However, Greg qualified his realization that the digital case study needed more restrictions than he had anticipated with the following assessment: "most of [the students] do a really good job" but, as in the print case study, some students "mess with [the iPad]."

Greg's reflection on the struggles with classroom management that were unique to the digital context often centered on how further technological developments could address many issues posed by a one-to-one device ratio in the classroom. He offered several suggestions about how Apple, the iPad's designer, might develop a more classroom-friendly version of the iPad digital platform or how iPad applications such as NearPod might support the ability to use the digital text with far fewer classroom management challenges. In summary of these reflections, he offered that teachers pioneering similar technologies in the classroom are "all looking for ways" to keep students on-task because:

> there's no question that the same 10% or 15% who are not paying attention to you in the standard, traditional lesson, are also not doing it [in the digital context] and now they're doing their email or whatever bazillion other things they're doing on the iPad.

Clearly, the digital context posed new and difficult classroom management challenges that were not equivalently experienced in the print case studies. This finding is especially striking given the lengthy classroom experience both participating teachers had, which likely made these challenges less overwhelming than they might have been for more novice teachers.

Given the significant classroom management challenges posed by using the digital text, the teachers' shared resolve that the digital text was well worth pursuing and preferable to the print environment seems especially noteworthy. Greg expressed this preference in the following quote: "There are things that will be really potentially

powerful that we simply won't be able to do any other way." Brian expressed similar optimism as he referred to the digital text and iPad platform as "really cool tools with a lot of potential" and emphatically added, "I want technology in my [class]room."

Brian also referred to a wider purpose for technology in education to explain his preference for the digital text. He felt that the digital environment allowed his students to "access this world of information" and "produce things that reflect the current technology" in a way that the print environment did not. Perhaps Brian's insistence that "we're trying to prepare kids to go out into the world….they need to be able to engage in the technologies that are there" most aptly captures why the considerable challenges posed by the digital case studies did not diminish either participating teachers' preference for the digital text.

Disengagement

In a converse, but related, finding to the increased classroom management challenges produced by the digital environment, the analysis of classroom observation data revealed that students in the print case studies exhibited stronger indications of disengagement than the students in the digital case studies. The theme of "disengagement" designated behavior where students appeared to be completely off-task from academic learning. For example, instances where students were observed sleeping or keeping their heads down on their desks for an extended period of time, or, instances where students were observed walking around the classroom at an inappropriate time without a specific purpose were coded as "disengagement." Table 12, below, summarizes the frequency of observed disengagement by case study.

Table 12:

Frequency of Disengagement Indicators from Classroom Observation Data by Case Study

Theme	Greg's Digital Case	Greg's Print Case	Brian's Digital Case	Brian's Print Case	Digital Case Frequency	Print Case Frequency
Disengagement	3	6	0	3	33%	67%

"Disengagement" behaviors were 34% more prevalent in the print case studies than the digital case studies. This evidence offers a more complex picture of the differences between digital and print experiences. In short, the complimentary analyses of multiple data sets portrayed the digital text as a more temporarily distracting experience than the print text while also a more holistically engaging experience. More longitudinal data than that included in the nine-day pilot undertaken for this research study would likely further elucidate the apparent complex and contradicting experiences of distraction and engagement that emerged from this analysis.

The Digital Text Required a More Substantial Investment of Classroom Time

The final important difference in student interactions with the print and digital texts was a discrepancy in time required to effectively integrate the digital text in the classroom. Both the analysis of classroom observation data and the analysis of teacher interview data made this difference quite evident. For example, in the classroom observation data, the theme of "differences in digital versus print contexts" emerged to capture a frequent occurrence of different volumes of human rights content being addressed between the print and digital case studies taught by the same teacher. The print

case studies were observed to read more quickly across teachers and therefore, addressed more content than their digital counterparts. Similarly, because the learning products created in the digital and print case studies were both qualitatively different and often required more sophisticated academic skills, students in the print case studies often created learning products in less time than students in the same teacher's digital case study.

A second, and related, theme of "time to implement technology" that emerged from the analysis of classroom observation data captured coded data that emphasized the additional time required to effectively implement the digital technology in the classroom. For example, instances where the teacher spent significant class time teaching students new technology skills, discussing behavioral protocols for the appropriate use of the iPad, or instances where class time was spent resolving technical issues are all captured by the theme of "time to implement technology." Similarly, a "hybrid model" theme emerged to designate observations of the teachers using printed handouts to facilitate their digital case study keeping pace with their print case study. For example, a teacher handing out printed note-taking templates for their digital case study to use rather than relying on the multiple note-taking functions provided by the digital text indicated that the teacher was relying on a "hybrid model" rather than a purely digital one.

The teacher interview data further emphasized that such a "hybrid model" was used to address the time constraints produced by the digital text. The teachers often referred to classroom activities such as reading content and creating learning products as more time-intensive in the digital case studies. Both teachers also referred to their sense

that using digital texts effectively would continue to require more time than the print context over the future months of the school year, as teachers and students developed the new skill sets required. In this way, the teacher interview data triangulated the key finding of the classroom observation data that the increased time required by the digital case studies was an important difference in the print and digital experiences.

Brian's assessment of the time-intensive nature of the digital case study was generally more positive than Greg's. Brian often followed his references to the digital case study requiring more class time with an insistence that "it's a much better experience." Greg's description of having "less time to teach" because of the necessity of teaching "another routine" to the digital case study suggested more negative connotations. In fact, the additional time required to work digitally became enough of an obstacle that Greg described feeling "forced" to adapt to a hybrid model where the students could opt to take notes on the text or annotate in print rather than electronically for the sake of "efficiency" because "it's faster and more accessible" for many students. Although Brian had similarly adapted the digital environment to a hybrid model when he felt it was necessary, he did not express similar frustration with this adjustment. Taken together, these two perspectives suggest that a digital text undoubtedly required additional classroom time. However, the level of frustration experienced by teachers as they integrated the digital text varied considerably.

Both teachers expressed a shared belief that their classes needed to work with a digital text over several months in order to better understand the differences between the print and digital contexts. Greg made several comments about the need for more time to

accurately understand the impact of the digital text such as: “We don’t feel like we’re leveraging what [the digital text] can do yet.” Brian more explicitly insisted that “it’s going to take time” because of the significant amount of “experimentation” involved. Ultimately, Brian believed he might need “a couple [of] years to really roll something out effectively” with a new digital technology.

The insights offered by these two teachers on both the time-intensive nature of using a digital text in the classroom and the reality that both students and teachers required time to adjust to the implementation of a new technology in the classroom offer some compelling cautionary wisdom for similar contexts trying to implement digital technologies. However, the additional time required by the digital text may considerably diminish over time or may be less significant in a context where students have more experience with the technology. The research design utilized for this inquiry intentionally sought data on just such initial experiences of a class working with a digital text by asking teachers to implement the human rights unit in September, as their first content unit of the academic year. Additionally, the survey data collected on student experiences with the iPad or similar tablet technologies revealed that the population of the case studies had somewhat limited experience with the specific technological skills necessary for effectively using the digital text. For instance, the quantitative analysis of student survey data indicated that less than 20% of students across all case studies reported using an iPad on a weekly or, more frequent basis. This background characteristic, as well as a research design that captured very early classroom experiences, may, therefore, be best understood as offering a snapshot of the baseline for

integrating a digital text and may overstate the discrepancy for a more technologically fluent context.

4.03 Countervailing Evidence

Although the data demonstrated that the digital text provided a qualitatively different academic experience to a certain extent, the data also provided clear evidence of several areas in which the type of text did not provide unique academic affordances or distinct student interactions with the text. The student artifact data, teacher interview data, student survey data and classroom observation data all provided key indications that at times, the type of text had little to no impact on students' learning experiences. Table 13, below, summarizes the most important takeaways from these analyses.

Table 13:

Summary of Key Points of Countervailing Evidence

Key Finding	Source(s) of Data
A. Minimal discrepancy existed in how students expressed relevant, analytical thinking in writing by type of text used.	• Student Artifacts • Teacher Interviews
B. Students summarize human rights content similarly regardless of type of text used.	• Student Survey
C. Type of text did not influence students' ability to make connections to prior knowledge as an indicator of *cognitive engagement.*	• Classroom Observations
D. Type of text did not increase the frequency of content-related questions as an indicator of *cognitive engagement.*	• Classroom Observations

The analysis of student artifact data provided the most unequivocal evidence that the type of text did not impact important aspects of the learning experience. Student artifact data was collected to provide insights into the following two sub-research questions: 1) Do student artifacts reflect a difference in the quality of student thinking when a social studies class work with a digital text versus a print text and if so, in what ways? and 2) In what ways, if at all, does a digital text support different academic skills for a high school social studies class than a printed text? The student artifacts were created as the final written assessment of student learning on the last day of the human rights unit in each of the four case studies. Therefore, this data was intended to capture any culminating differences in student thinking that were consistently apparent between the print and digital case studies. Student artifacts were created in response to the following prompt: What human rights policy option should the United States pursue and why?

Student artifacts were assessed according to the rubric included in Appendix F that was drawn from Northeastern Illinois University's Critical Thinking Rubric (http://www.neiu.edu/~neassess/pdf/CriThinkRoger-long.pdf). Student artifacts were analyzed in order to better understand students' abilities to: a) address the prompt b) frame an analytical argument; c) understand main ideas in a text & interpret content; and d) express creative thinking (i.e. make independent interdisciplinary or prior knowledge connections) in writing. A sample student artifact from each case study, selected to reflect a median score for the case study, is provided in Appendix E. Figure 9, below, provides a graphic summary of the average student achievement on the critical thinking

rubric by case study. A more detailed summary of how individual student artifacts scored within each case study is included in Appendix G.

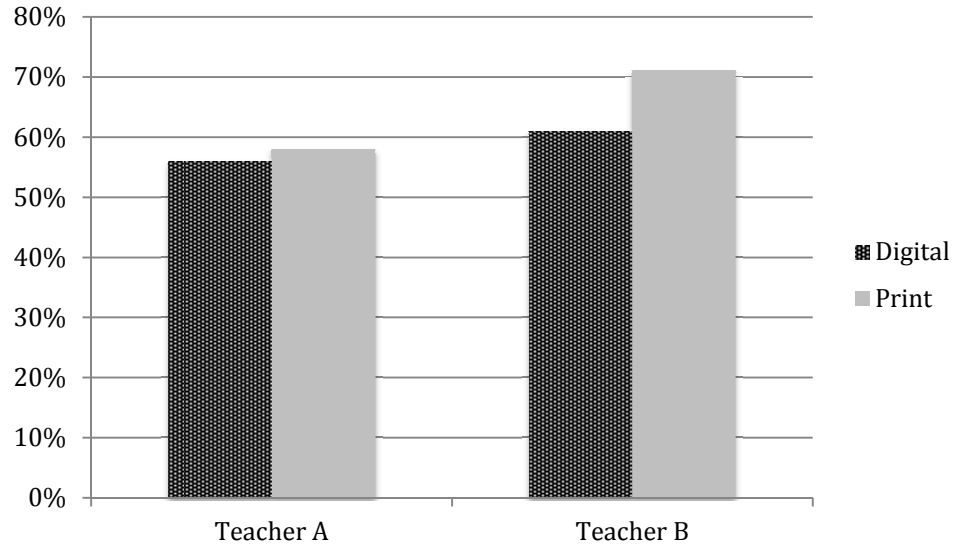

Figure 9: Average Critical Thinking Scores on Student Artifacts by Case Study

The most significant disparity apparent in a cross-case comparison of the student artifacts was the higher performance on the critical thinking rubric achieved by Brian's case studies. Student artifacts from Greg's case studies scored respective averages of 56% and 58% versus Brian's case studies that scored respective averages of 61% and 71%. More importantly for the focus of this inquiry, the print case studies for both teachers scored slightly higher than the digital case studies. For example, student artifacts from Greg's print case study scored an average of two percentage points higher than students from his digital case study. A similar pattern, with an even greater discrepancy of 10%, existed between the average scores for student artifacts in Brian's case studies.

Also noteworthy were the relatively small gaps in average performance between three out of four of the case studies. A maximum of five percentage points accounts for the differences between three out of four of the case studies with only Brian's print case study scoring significantly higher at 71%. The relative consistency between student artifacts was even more apparent when comparing student performance on individual categories of the rubric. For two out of four categories, student averages fell within a half-point range of one another. For example, across all four case studies, students scored within the range of 56% - 68% on their ability to interpret content. The relative stability of the scores across all four case studies in this category is especially important because the ability to appropriately interpret content more directly refutes a claim that quality of student thinking is influenced by the type of text used than a student's ability to address the prompt, frame an argument or display creative thinking.

Given that much of the difference between student artifacts was attributable to Brian's print case study, the student artifacts did not provide compelling evidence of a difference in the quality of student thinking based on the type of text. The results of this analysis prompted relevant additional data gathering during the teacher interviews to provide a better understanding of the differences in critical thinking assessed by the written artifacts that were apparent from the teachers' perspectives. Despite some evidence of a gap in performance between the digital and print case studies, neither teacher expressed the belief that the print case study had, in fact, demonstrated a greater ability to address the prompt, frame an argument, interpret content or offer creative thinking relevant to the unit on the whole. When asked explicitly if the print case study

was able to perform slightly higher because they did not face the struggle of learning new technology skills as they learned the content, both teachers were quick to attribute the difference in performance to a key aspect of the research design instead.

In order to ensure that the digital case studies were not predisposed to greater success than the print case studies, the research design required that teachers implement the digital text in their earliest section of World History. This research decision was based on the understanding that subsequent sections of a class frequently receive a better learning experience due to the reality that the teacher is able to adapt instruction to address student needs that are discovered during the first iteration of teaching the unit. Thus, both teachers independently cited the changes in their own approaches to instruction during the preparation for the writing assessment and their increased ability to support students in the print case study during the writing task due to the instructional lessons learned during the first iteration with their respective digital case studies. Given this triangulated evidence, it is even more difficult to attribute the differences in student achievement on the artifacts to the type of text used rather than the increased teacher support provided to the print case studies due to the constraints of the research design.

Taken together, both the analysis of student artifact data and the confirmatory evidence offered by the teacher interview data suggest that a digital text does not support analytical writing more effectively than a print text does. Differences in students' ability to address a prompt, frame an argument, interpret content and display creative thinking were more often attributable to the teacher than the type of text. Some differences in the quality of thinking expressed in writing between the digital and print case studies may

also be attributed to timing-- where latter cases benefited from intentional adjustments in a teacher's instruction. The most compelling results of the analysis of student artifact data undertaken here indicate that the role of the teacher in general, as well as the particular ability of the teacher to tailor instruction to effectively support students during the writing process, has a more definitive impact on students' ability to express critical and analytical thinking in writing than the type of text used.

The qualitative analysis of student survey data provided parallel countervailing evidence for the efficacy of a digital text in supporting unique academic affordances. Student response patterns to the open-ended survey question that prompted students to summarize the most important content they had learned during the human rights unit indicated that the type of text did not significantly impact how students summarized their learning. Regardless of the type of text used, the majority of student responses defined human rights in general terms. Responses such as "humans have certain rights" or "everyone has rights" were typical across all four case studies. The second most prevalent response pattern exhibited some level of critical reflection on the human rights content. Responses such as: "Some countries brutally violate human rights" or "Rights are dictated by those in power" typified this pattern. Figure 10, below, provides a visual summary of the most important themes to emerge from an analysis of student survey response patterns for this prompt.

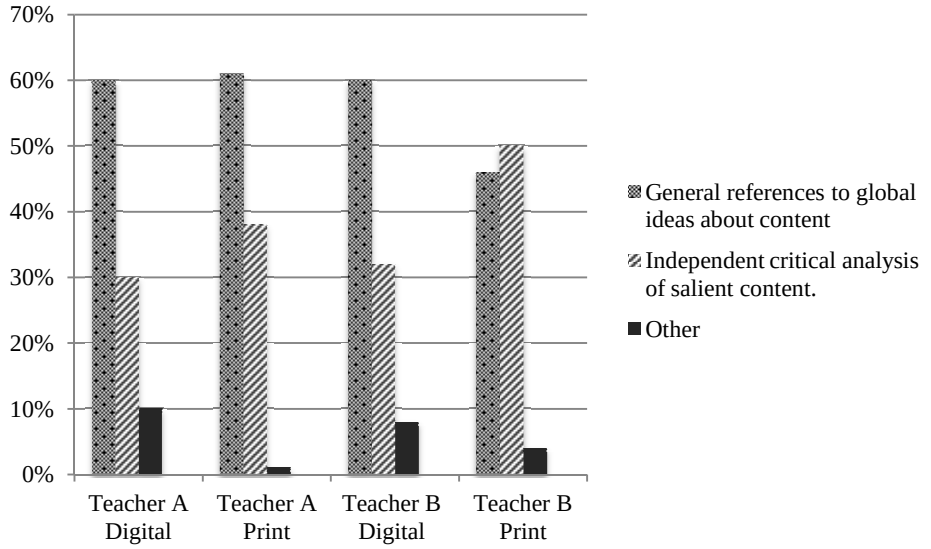

Figure 10: Emergent Themes from Student Responses to the Prompt: "The most important information I learned during the human rights unit was..." By Case Study.

The most noteworthy disparity in the quality of student responses between cases was exhibited by Brian's print case study. In both Greg's digital and print case studies, as well as Brian's digital case study, 60% of student comments fell into the more general, definitional category of human rights while 30% of student comments reflected more specific or analytical thinking about the content. However, a 50% majority of Brian's print case study's responses reflected critical thinking on the human rights content while only 46% of student comments made more general references to a definition of human rights. Given that this increased level of critical thinking closely parallels the higher achievement by the same case study on the student artifacts, it is most likely attributable to the individual abilities of the student population of Brian's print case study. Further, the strikingly similar rates of general responses that persisted across the remaining three

case studies indicate that the type of text or teacher did not reliably predict the quality of student thinking about the human rights content.

The classroom observation data offered further evidence that the type of text did not demonstrably influence key aspects of the learning experience. Table 14, below, summarizes the frequencies of the engagement indicators that were similarly exhibited across all four case studies in the classroom observation data.

Table 14:

Similarly Exhibited Engagement Indicators by Case Study

Theme	Greg Digital Case	Greg Print Case	Brian Digital Case	Brian Print Case	Digital Case Frequency	Print Case Frequency
Engaged with Reading	27	26	18	17	51%	49%
Engaged with Academic Task	65	58	75	57	55%	45%
Student Questions	69	38	51	56	56%	44%

Given this inquiry's focus on the differences in the learning experience provided by a print text and a digital text, coded behavior that provided particular evidence of students' experiences with the text constituted an important theme of "engaged with reading." Behavior that was characterized as "engaged with reading" exhibited active or focused reading that was qualitatively different than the more consistent patterns of reading exhibited by their peers. Behavior that was coded as "engrossed in the task of reading for the entire fifteen-minute interval of observation" or "active reading" (i.e.

intermittently writing notes, highlighting or annotating the text while reading) are the most common demonstrations of coded data that comprised the theme of "engaged with reading."

The analysis of classroom observation data revealed that the important emergent theme of "engaged with reading" was experienced quite similarly by both the print case studies and the digital case studies. The two digital case studies experienced 51% of the behaviors that were analyzed as "engaged with reading" versus the 49% of similar behaviors observed in the print case studies. Therefore, one of the themes most relevant to the research question of "How do high school social studies students interact differently with a digital text than a printed text, if at all?" clearly indicates that no qualitatively different level of engagement with the reading was readily linked to the type of text in the classroom observation data. This evidence offers an important contrast to the student survey data and teacher interview data which both indicated the digital text supported a better reading experience for students. The triangulation of data suggests that if a digital text does, indeed, provide important support for the reading experience, such an affordance may not be readily observed.

Two other key themes similarly indicate that a strikingly different experience between the digital and print texts was not apparent in the classroom observation data. The theme "engaged with an academic task" captured the broadest category of data that provided strong observational evidence that students were actively participating in their learning (Marks, 2000). Behaviors such as reading an excerpt of the digital or print text aloud to a small group of students; highlighting or annotating a section of text in response

to an explanation of content by the teacher or a peer; or listening to a speaker with appropriate eye contact, body language and responsive facial expressions are some common examples of coded behavioral data that addressed this theme. The frequencies with which students were observed to be "engaged with an academic task" exhibited a 10% difference between digital case studies and print case studies. Although the digital case studies demonstrated the higher percentage of observed engagement for this indicator, the difference is not as marked as the differences that emerged between digital and print case studies for several other indicators of engagement. Therefore, it does not offer irrefutable evidence of a qualitatively different learning experience provided by the digital text.

The prevalence of academically relevant questions by case study was the final indicator to provide important countervailing evidence. The literature on student engagement emphasizes that when students pose academically relevant questions, they are providing strong evidence of cognitive engagement (Fredricks, Blumenfeld and Paris, 2004). In Greg's case studies, the difference between the digital and print contexts was 29%-- with students in the digital case posing questions considerably more often than students in the print case study. However, in Brian's case studies, the frequency with which students posed questions was nearly equivalent with only a 2% difference—and slightly more questions posed in the print context than the digital. Therefore, the frequency with which students posed questions across the four case studies offers a picture of student engagement that cannot be readily linked to the type of text used.

In summary, the differences between the digital and print case studies' interactions and experiences were not apparent across all academic skills or all indicators for engagement. The analysis of student artifact data revealed that the teacher was far more influential than the type of text in supporting writing that exhibited critical thinking. Similarly, the student survey data indicated that the type of text had no impact on how students summarized the main ideas they had learned about the human rights content. In the classroom observation data, "engagement with the reading", "engagement with an academic task" and the "questions" on academic content posed by students were observed with relatively consistent frequency across all case studies and do not appear to conclusively depend on the type of text. Therefore, the analyses of data did not present an irrefutable or unqualified argument for the benefits of using a digital text in the high school social studies classroom.

4.04 Digital Experience for Students of Color

The analyses of student survey data and classroom observation data each provided important insights into how students of color in particular interacted with the digital text as well as how the affordances of a digital text supported the learning experience of English Language Learners. The data provided some limited, yet important, preliminary implications for how access to digital technologies may intersect with persistent equity challenges in the public education classroom.

The quantitative analysis of student survey data provided important insights into significant differences and similarities between the academic attitudes and expectations of white students and students of color as well as how different racial and cultural

demographics reported having access to technology. These background characteristics were analyzed based on the assumption that a statistically significant association between a racial or cultural group and their academic attitudes or their access to technology may meaningfully mitigate a student's experience of the type of text used during the human rights unit in their social studies class. Table 15, below, provides a summary of academic attitudes and expectations by key demographic subgroup. Student demographics that demonstrated a statistically significant relationship with an academic attitude or expectation are indicated as such. Figure 11, below, first provides a graphic snapshot of the same information.

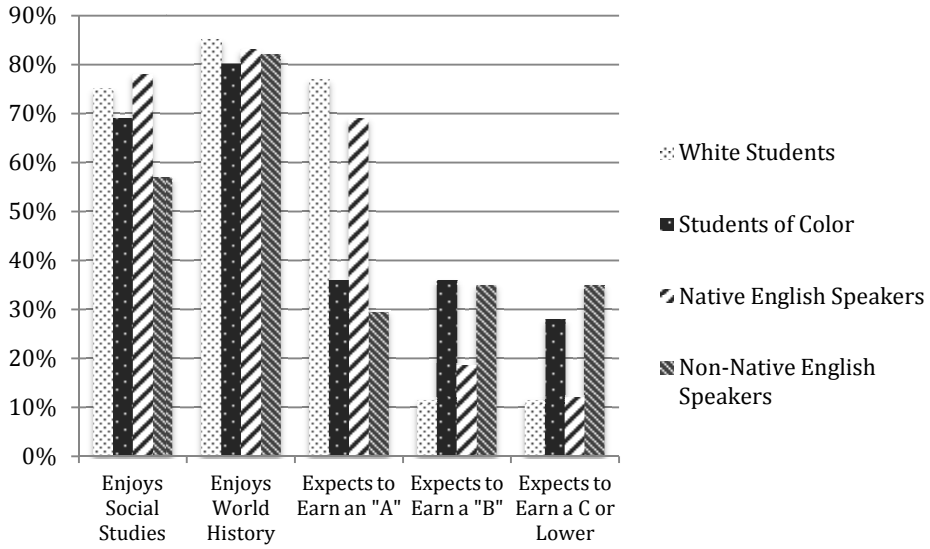

Figure 11: Academic Attitudes & Expectations of Student Population by Demographic

Table 15:

Academic Attitudes& Expectations of Student Population of Case Studies by Demographic

	Total (N =118)
Student Reports Enjoying Social Studies	
White Students	46 (75%)
Students of Color	38 (69%)
Native English Speakers	63 (78%)
Non-Native English Speakers*	19 (57%)
Student Reports Enjoying World History	
White Students	62 (85%)
Students of Color	45 (80%)
Native English Speakers	68 (83%)
Non-Native English Speakers	28 (82%)
Student Expects to Earn an "A" in World History Class	
White Students**	46 (77%)
Students of Color**	20 (36%)
Native English Speakers	56 (69%)
Non-Native English Speakers**	10 (29.5%)
Student Expects to Earn a "B" in World History Class	
White Students**	7 (11.5%)
Students of Color**	20 (36%)
Native English Speakers	15 (18.5%)
Non-Native English Speakers**	12 (35%)
Student Expects to Earn a "C" or lower in World History Class	
White Students**	7 (11.5%)
Students of Color**	15 (28%)
Native English Speakers	10 (12%)
Non-Native English Speakers**	12 (35%)

*$p < 0.05$ for Chi-square Statistical Analysis of Strength of Association
**$p < 0.01$ for Chi-square Statistical Analysis of Strength of Association

Primary Language & Race/Ethnicity Significantly Influence Academic Expectations

The quantitative analysis of student survey data indicated that a student's primary language exerted the most significant and comprehensive influence on a student's relevant academic experiences. Students who reported that English was not their primary

language were significantly less likely to report enjoying social studies classes than students who reported that English was their primary language. Non-native English speakers reported enjoying social studies less often than native English-speaking students at an alpha level of $p < 0.035$, well below the $p < 0.05$ accepted threshold for significance.

A student's language status also exerted a statistically significant influence on a student's expectation for their grade in World History. Non-native English speakers were significantly less likely to expect to earn an 'A' or a 'B' in their World History class than native English-speakers while they were also significantly more likely to expect to earn a 'C' or below than native English-speakers. For example, 69% of native English-speakers expected to earn an 'A', while only 29.5% of non-native English speakers expected to earn an 'A'. Inversely, 35% of non-native English speakers expected to earn a 'C' or lower, or nearly three times as many as the 12% of native English speakers with parallel expectations. The association between primary language and a student's expected grade in their World History class was highly significant, at the level of $p < 0.001$. Primary language spoken clearly plays a substantial role in lowering a student's academic expectations in relation to their native English-speaking peers.

A similar disparity in academic expectations existed between white students and students of color. A large majority of white students, or 77%, expected to earn an 'A' in World History while less than half of that percentage, or 36%, of students of color expected to earn an 'A'. Inversely, students of color were three times as likely to expect a 'B' as their white counterparts and more than twice as likely to expect a 'C' or lower.

While some of the students of color are also represented in the previously discussed population of non-native English speakers, the population of students of color in the sample is more than double the size of the population of non-native English speakers in the sample. Therefore, the highly statistically significant association between race and ethnicity and a student's expectations for their grades of $p < 0.001$ indicates that race and ethnicity play a role in determining a student's academic expectations independently of a student's primary language.

Two key findings in the data seem to indicate that the student academic expectations reported here were strongly influenced by students' prior academic experiences. First, this data was collected in October of 2012, less than two months after the start of the first academic semester and more than three months before the class's first semester grades would be assessed. Therefore, student expectations for their future grades in World History were likely influenced by their previous grades in social studies classes in general (or other classes that students perceived to be similar) rather than by their experiences in World History in particular. Second, student reports of their enjoyment of their current World History class sharply contrasted the disparities in how different demographic groups reported their enjoyment of social studies classes in general or their expectations of future grades in World History. For example, student reports of their enjoyment of World History were remarkably similar across all key demographic groups. Eighty-five percent of white students reported enjoying their World History class versus 80% of students of color, with no statistically significant association found. Similarly, 83% of native English-speakers reported enjoying World History versus 82%

of non-native English-speakers. This relatively common experience of enjoying World History class seems to indicate that students felt similarly connected to the general classroom experience across racial and cultural groups at the time that this research was conducted. Therefore, the similarities in how different demographic groups reported feeling engaged by the content or skills of the human rights unit may be more confidently attributed to the relevant variable of type of text rather than an intervening variable created by contrasting subgroups' perceptions of their World History class.

Students of Color Report Similar Access to Technology & Perceptions of Technology Skills as White Students

In contrast to the significantly lower academic expectations reported by students of color, the quantitative analysis of student survey data indicated that students had very similar access to technology and perceptions of their own technology skills, regardless of their race and ethnicity or their primary language status. Figures 12 and 13, below, provide a graphic summary of the most salient patterns of technology use reported by the student population of the case studies. In addition, a complete table reporting all data on student access to technology collected by the survey is included in Appendix K.

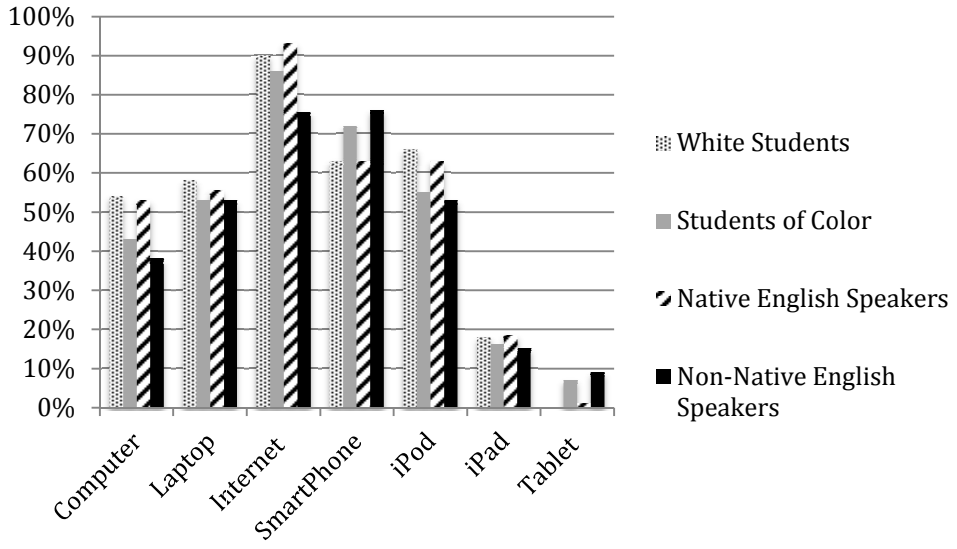

Figure 12: Student Reported Daily Use of Technology by Demographic

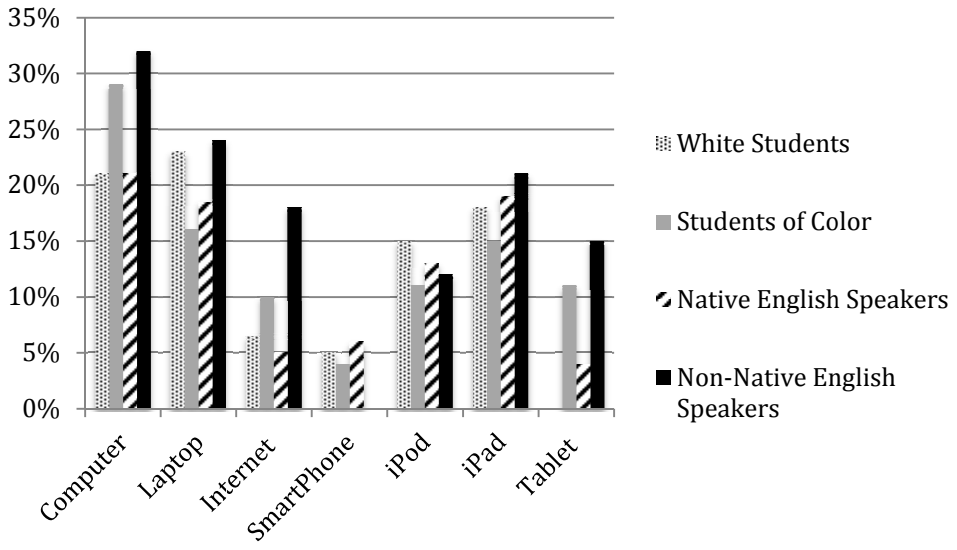

Figure 13: Reported Weekly Use of Technology by Demographic

As the graphic summaries of students' technology use, displayed above, indicate, students reported strikingly similar access to a wide variety of relevant technologies

across demographic groups. White students did report higher rates of access to all technologies, excluding SmartPhones, than students of color. Nevertheless, no statistically significant association between race and ethnicity and a student's access to multiple electronic devices existed, nor did a statistically significant association between race and ethnicity or primary language and access to the Internet.

However, a digital divide hovering close to statistical significance was found to exist between non-native English-speakers' access to the Internet and their native English-speaking counterparts (See Appendix K). Pearson's Chi-square analysis of the association between primary language and access to the Internet was $p < 0.053$. While technically, the accepted threshold for significance is below the alpha level of 0.05, this association is close to statistical significance. The comparatively low level of access to the Internet reported among non-native English speakers may well capture an existing socioeconomic divide in the student population between native English-speakers and non-native English-speakers.

The subgroup of non-native English-speakers in the sample is likely populated by students who have recently immigrated to the United States or who are the children of immigrants. Therefore, if primary language is serving as a proxy indicator of immigrant status and, an attendant socioeconomic status, the statistically significant associations found between primary language and student survey responses throughout the quantitative analysis of data likely indicate that the economic realities of non-native English-speakers' home lives exert a powerful influence on these students' academic experiences and expectations, as well as their experiences with technology.

However, as student perceptions of their own technological fluency summarized graphically in Figure 14, below, and reported in Appendix L, indicate, non-native English speakers do *not* report a perceived disparity of technical skill. The similar perceptions of technological fluency reported across key demographic groups may be a function of the relatively equitable access to technological devices that the holistic picture of student access to technology provides.

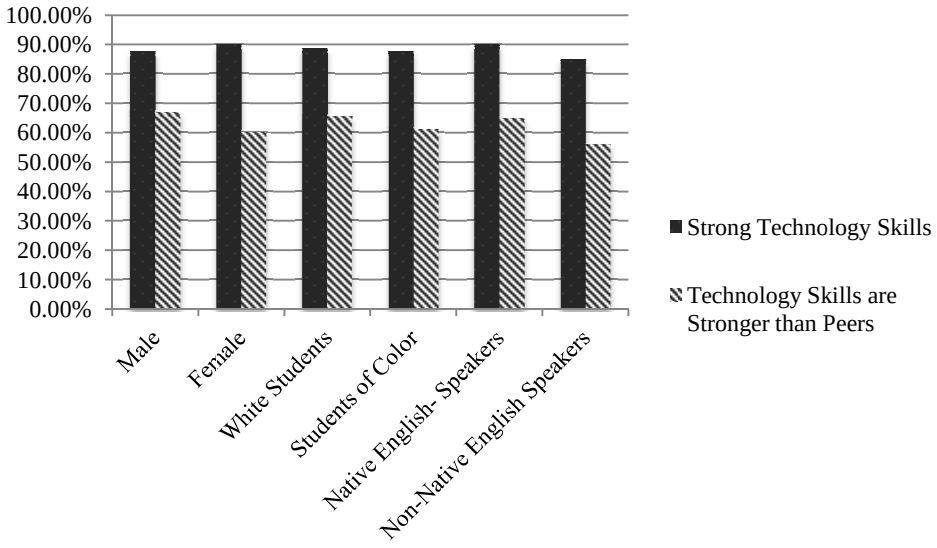

Figure 14: Student Perceptions of Own Technology Skills by Demographic

Most importantly, the data summarized in Figures 12, 13 and 14, above, captures the reality that the disparities in access to technology for the population sampled do not mirror the national "digital divide" (see section 1.02). The much narrower "digital divide" present in the student population of these case studies may indicate that the divide is rapidly shrinking and that access for people of color in the United States increased significantly between 2010 and 2012. Alternatively, the case studies researched here may

represent an anomalous picture of much more equitable access across racial and cultural subgroups than the national picture bears out. If the latter scenario is, in fact, the reality, the implications of this research are likely only relevant for sites where students report similar access to technology across racial and ethnic as well as linguistic subgroups.

Race/Ethnicity & Primary Language Exert Limited Influence on Student Engagement

The quantitative analysis of student survey data indicated that students of color and non-native English speakers reported quite similar levels of student engagement to those reported by white students on the majority of indicators. However, race and ethnicity and primary language status were significantly associated with how students reported finding the human rights content challenging. Importantly, this disparity in experience was consistent across case studies and was not appreciably increased by the use of the digital text. Table 16, below, displays the results of the quantitative analysis of student engagement indicators in the student survey data.

Table 16:

Indicators of Student Engagement by Demographic Subgroup

Engagement Indicator	White Students n=62	Students of Color n=56	Native English n=82	Non-Native English n=28
Students felt challenged by content.	23 (37%)	31 (56%)*	31 (37%)	22 (67%)*
Students felt challenged by technology use in class.	14 (23%)	11 (20%)	15 (18%)	9 (27%)
Students felt challenged by class work.	16 (26%)	19 (34%)	20 (24%)	13 (39%)
Students felt challenged by homework.	8 (13%)	16 (29%)	13 (16%)	10 (30%)
Student reports enjoying learning about human rights content.	38 (62%)	36 (65%)	52 (63%)	20 (60%)
Students learned information that was relevant for them personally.	55 (89%)	48 (86%)	73 (89%)	28 (85%)
Students will use the information learned outside of class.	47 (77%)	43 (77%)	62 (77%)	26 (79%)
Students learned skills they can use outside of class.	43 (69%)	44 (80%)	58 (71%)	27 (82%)
Students will discuss human rights outside class.	33 (54%)	28 (50%)	44 (54%)	16 (47%)
Students will learn more about human rights.	22 (36%)	21 (37%)	27 (33%)	15 (44%)

*$p < 0.05$ for Chi-square Statistical Analysis of Strength of Association

The quantitative analysis of student survey responses indicated that students of color were significantly more likely to report feeling challenged by the content of the human rights unit than their white counterparts at the level of $p < 0.018$, well below the accepted threshold for statistical significance of $p < 0.05$. In parallel, non-native English-speakers also reported feeling challenged by the human rights content at significantly higher rates than their native English-speaking counterparts. The statistical association between non-native English speakers perceptions of challenge was more highly significant than those of students of color, at a level of $p < 0.007$.

Like the significantly lower academic expectations reported by students of color and non-native English speakers, the association between perceptions of challenging content and race and ethnicity or language and culture offers a substantial, and troubling, indication that these students did not enjoy an equitable learning experience with their white counterparts. However, the persistence in these significantly statistical associations across both print and digital case studies, as well as the relatively equitable access to technology reported across demographics, is a hopeful indication that the use of the digital text did not, in itself, exacerbate existing academic inequalities.

This reality is further substantiated by the lack of statistical association exhibited between race and ethnicity or language and culture and how students reported feeling challenged by the technologies used in class. In fact, only 20% of students of color reported feeling challenged by the technologies used in class, at a slightly lower rate than the 23% of white students who reported feeling challenged. Similar rates of native English-speaking students reported feeling challenged by technologies at 18% while non-

native English-speakers reported at the highest rate of 27%. In addition, although students of color and non-native English speakers did report feeling challenged by class work or homework at higher levels than white students or native English speakers, the disparities in how students reported experiencing these challenges were not statistically significant.

More hopefully, students reported similar levels of cognitive engagement across demographic groups for multiple indicators of engagement. For example, despite reporting the human rights content to be challenging, students of color and non-native English speakers reported enjoying the human rights content; finding the content relevant; and learning information and skills they will use outside of class at almost exactly equivalent levels to those reported by white students and native English speakers. Similarly, no statistically significant association existed between how diverse students reported that they would discuss human rights outside of class; or learn more about human rights on their own. If the increased student engagement provided by a digital text is, in fact, broadly shared across racial demographics as this data suggests, students of color and white students were equal beneficiaries. While quite preliminary, this finding indicates that a digital text might positively contribute to an equitable learning experience for students of color alongside their white peers.

Taken together, the results of the quantitative analysis of student survey data indicate that while race and ethnicity and language and culture did significantly influence a students academic expectations and their experience of the challenge of the human rights unit, they did not exert a universal influence on student engagement. Critically, the

disparities in the expectations and experiences of students of color and non-native English speakers persisted regardless of the type of text used. In addition, students reported similar access to technology, perceptions of their own technological fluency and experiences of technology in the classroom regardless of their racial and ethnic background or linguistic status. Therefore, the analysis of student survey data strongly suggested that the digital text did not create new barriers for learning in the classroom for students of color or non-native English speakers but, rather, broadly supported cognitive engagement. The classroom observation data provided evidence that further triangulated this finding.

Because the implications for equity when a class works with digital technologies were particularly important to this inquiry, students of color were an explicit focus of the STROBE observational protocol used to collect classroom observation data. As discussed in section 3.05, the STROBE instrument's procedure relies on a detailed observation of four students during each observation cycle. Therefore, the observational protocol explicitly focused upon four students that offered a representative balance of gender and race/ethnicity during each observation cycle. For example, each observation cycle focused on two male and two female students as well as two white students and two students of color. Of course, both gender and race or ethnicity are often not apparent to an observer and may be misinterpreted due to the subjective biases of the researcher. Nevertheless, an attempt was made to bring this additional awareness of how particular subgroups of students were interacting in the classroom to the observational procedure in

order to better ensure that the data collected would accurately represent the experiences of diverse demographic subgroups in the classroom.

In addition, the relatively equivalent representation of students of color and white students in the population of the case studies provided further confidence that the classroom observation data was capturing the learning experience of diverse students. As noted previously in section 3.03, students of color comprised 47.5% of the student population while white students comprised 52.5%. These similar proportions of whites and students of color, provided ample opportunities to discern if and how the learning experiences of students of color and white students differed as they interacted with the print or digital text over the sixteen discrete classroom observations. However, the analysis of classroom observation data did not provide evidence that students of color were interacting with the print or the digital text in noticeably different ways. In fact, just as the relatively similar levels of cognitive engagement on multiple indicators provided by the student survey data suggested, students of color presented a quite parallel picture of engagement to their white counterparts on multiple emergent themes of behavioral engagement provided by the classroom observation data.

In contrast to a potentially disparate experience provided by the digital text for students of color, the classroom observation data provided modest evidence that one sub-group of students of color enjoyed additional support from the unique affordances of the digital text. The classroom observation data indicated that non-native English speakers had notably positive experiences with the digital text due to the additional learning supports provided by the embedded multimedia content. As noted in section 4.01, the

English Language Learning specialist in Brian's case studies provided data that strongly suggested English Language Learners substantially benefited from the multimodal reading experience afforded by the digital text. This finding is especially important in light of the fact that non-native English speakers reported significantly lower academic expectations than their native English-speaking peers. If the academic supports provided by a digital text are particularly beneficial to English Language Learners as this data suggests, the digital text may somewhat mitigate the gap in academic expectations and contribute to a more equitable learning experience for this subgroup of students of color.

Finally, the teacher interview data did not provide evidence that Greg or Brian perceived that the type of text created either particular opportunities or barriers for the students of color in their print or digital case studies. For example, although both teacher interviews provided substantial data about how students in the digital case studies struggled with the technology skills required to by the digital text, neither teacher believed that the students of color in their respective digital case studies struggled more than white students with this challenge. This shared perception is further substantiated by the comparable rates of technology use and perceived technology skill reported by whites and students of color as well as the similar rates with which student subgroups reported feeling challenged by the use of technology in class.

Table 17, below, provides a comparative summary of how students reported using the iPad and similar tablet devices that would have provided the most transferable technology skills for the digital text piloted during this study (see Appendix K for a comprehensive summary of digital technology use by student demographic). Although at

18%, white students had a slightly higher rate of daily or weekly use of the iPad device than students of color at 15% and 16%, respectively, no statistically significant association existed between race/ethnicity and iPad or tablet use. Further, students of color reported a higher rate of use of other tablet technologies than white students. Similarly, although more native English speakers reported using iPads on a daily basis than non-native English speakers, a larger proportion of non-native English speakers reported using the technology on a weekly basis. Non-native English speakers also reported using other tablet technologies more frequently than their native English-speaking counterparts. The roughly equivalent experience with the requisite technology skills suggested by these data may usefully explain why neither the classroom observation data nor the teacher interview data suggested that students of color had noticeably different interactions with the digital text than white students.

Table 17:

Reported Use of iPad/Tablet Technology by Student Demographic

	Daily n(%)	Weekly n(%)	Monthly n(%)	Never n(%)	
Whites					
iPad	11 (18%)	11 (18%)	3 (5%)	33 (53%)	62 (100%)
Tablet	0 (0%)	0 (0%)	1 (2%)	59 (95%)	62 (100%)
Students of Color					
iPad	9 (16%)	8 (15%)	6 (11%)	32 (58%)	55 (100%)
Tablet	4 (7%)	6 (11%)	3 (5%)	43 (77%)	56 (100%)
English as Primary Language					
iPad	15 (18.5%)	15 (18.5%)	6 (7%)	46 (56%)	82 (100%)
Tablet	1 (1%)	3 (4%)	1 (1%)	77 (94%)	82 (100%)
English as Secondary Language					
iPad	5 (15.2%)	7 (21.2%)	3 (9.1%)	18 (54.5%)	33 (100%)
Tablet	3 (8.8%)	5 (14.7%)	3 (8.8%)	23 (67.6%)	34 (100%)

4.05 Role of the Classroom Teacher

In addition to the implications for the specific research questions that guided this inquiry, the analysis of data persistently illuminated the powerful role of the classroom teacher in guiding student learning. Although social studies educators have a critical role to play in helping students develop robust digital literacy skills in the classroom, and a substantial body of literature argues that teachers are the most significant factor for successfully integrating technology in the classroom (Ertmer, 2005; Prensky, 2001; Shiveley & VanFossen, 2008; Thieman, O'Brien, Lee and Hinde, 2009; VanFossen,

2000; VanFossen & Waterson, 2008), the research questions posed here primarily focused on the experiences and perspectives of students. Nevertheless, the influence of the classroom teacher was overwhelmingly apparent throughout the data collection and analysis phases of this research. Therefore, an accurate discussion of the results and conclusions of this research would be remiss if this significant finding was not explicitly addressed here.

First, the methodological necessity of comparing print and digital classroom contexts that shared a single teacher was clearly affirmed by the experience of collecting classroom observation data. Although this phenomenon is difficult to articulate, much less to quantify, the role of the teacher in setting the tone for the classroom dynamics and for shaping the entire learning environment was quite palpable during every classroom observation. For example, the frequency of student-initiated comments on academic content (addressed previously in section 4.02 & Table 9) seemed to very clearly depend upon the classroom dynamic created by the teacher's expectations. Thus, in both Brian's print and digital case studies, student-initiated comments were far more prevalent than in either of Greg's case studies. Table 18, below, displays the frequency of student-initiated comments by case study to reflect this disparity that seemed largely dependent on the teacher.

Table 18:

Frequency of Student-Initiated Comments on Academic Content by Case Study

Theme	Greg Digital Case	Greg Print Case	Brian Digital Case	Brian Print Case	Digital Case Frequency	Print Case Frequency
Student Comments	14	0	82	63	60%	40%

The pivotal role of the teacher was also manifested in the student artifact data. As detailed in section 4.03, the analysis of student artifact data revealed that the ability of the teacher to appropriately support students during the writing process was the most important determining factor in student performance on the critical thinking rubric.

Perhaps most importantly, the student survey data indicated that students across all four case studies experienced the U.S. Senate simulation as one of the most powerful and engaging aspects of the human rights unit. Forty-eight percent of all student responses to the prompt on the "best part" of the unit made references similar to the following examples: "debating different options for the United States on human rights" and "trying to persuade the Senate to choose your option." The frequency of student references to the Senate simulation is noteworthy because both teachers substantially guided this experience in each of their respective case studies. Also significantly, this simulation did not include any digitally enhanced components and was grounded entirely in human interactions in the classroom (an important and conscious curriculum development decision that was made during the design phase of the digital text) in both the print and digital case studies. Students' positive experience with the U.S. Senate

simulation, as well as their perception of its relevance for their learning, reinforces the notion that digital technology cannot substitute for the power of learning through human relationships.

Second, the powerful role of the teacher in determining how students experience learning through a digital technology was quite evident in the teacher interview data. Both teacher participants possessed considerable teaching expertise, high levels of technological fluency, and clear enthusiasm for successfully integrating digital technologies—despite the significant new challenges such technologies posed for their instruction. As both teachers expressed numerous times in the teacher interview data, less experienced or less enthusiastic teachers are far less likely to have enabled the same levels of success with the digital text for their students. In fact, much of the data analyzed for this inquiry seems to confirm the finding that teachers are the most critical factor for successfully integrating technology in the classroom (Prensky, 2001; Shiveley & VanFossen, 2008; Thieman, O'Brien, Lee and Hinde, 2009; VanFossen, 2000; VanFossen & Waterson, 2008) as well as Ertmer's (2005) conclusion that a teacher's pedagogical orientation to technology is the best predictor of a successful classroom technology integration.

In addition to supporting an understanding of the compelling influence of the teacher, this data also suggests that there are likely to be significant limitations to the transferability of the benefits of the digital text apparent in this research to K-12 contexts where teachers have less comfort with technology than the teachers included in this study. In short, the strong and persistent indicators that the classroom teacher may matter

most for offering students the potential academic and engagement benefits of digital technology offer an important caution against relying on the power of technology as a learning tool in lieu of the power of human relationships. This data affirms the contention that digital technologies may be necessary but not sufficient for social studies education in the twenty-first century and that digital learning opportunities are most powerful when coupled with the content and pedagogical expertise of the classroom teacher.

4.06 Summary of Findings from Data Analyses

The analysis of data offered evidence that the use of the digital text supported technological fluency, the creation of more sophisticated learning products, differentiation for multiple learning styles and a more supportive reading experience due to its multimodal features. The evidence further suggested that these unique academic affordances were not equivalently supported by the use of the print text. However, the type of text did not demonstrably influence how students wrote about the human rights content on either the student survey or the analytical writing assessment or the frequency with which students posed questions on the human rights content.

The analysis of data also suggested that students were more cognitively and behaviorally engaged in the digital case studies on a handful of key indicators. This increased level of engagement was the most noteworthy difference in how students interacted with a digital text versus a print text. Finally, the data suggested that the digital text did not create a negatively discrepant learning experience for students of color

but, rather, supported increased student engagement for both white students and students of color.

The data also suggested that the digital text posed significant challenges for both students and teachers. The digital experience required students to learn new and challenging technology skills. The digital text also required more class time and created more classroom management challenges for teachers than the print experience. Despite these additional challenges, both students and teachers seemed to prefer the digital experience to the print. Thus, the digital text seemed to provide both a more challenging and a more rewarding experience for the digital case studies.

CHAPTER V

INTERPRETATIONS OF FINDINGS

The data analysis conducted for this multiple-case study provided several key results that inform the theoretical frameworks that guided this inquiry. Table 19, below, provides a visual summary of the most important implications of this research for the frameworks of social studies education, student engagement and greater equity for students of color and students of poverty in the public education system.

Table 19:

Implications of Research for Theoretical Frameworks

Key Finding	Relevant Guiding Framework
A. Digital text supported the development of technological fluency & may contribute to the longitudinal development of digital literacy.	21st Century Social Studies Skills
B. Digital text supported *cognitive engagement*: a. Better support for the reading experience b. Increased perceptions of relevance of content & skills	Student Engagement
C. Digital text supported *behavioral engagement* a. Effort or investment in learning b. Collaborative learning c. Student autonomy	Student Engagement
D. Students of color and white students had strikingly similar experiences of both the unique academic challenges and the unique benefits of the digital text	Equity

5.01 Implications for Social Studies Skills

Integrating greater technological fluency and digital literacy into high school social studies education in order to provide the skills United States citizens increasingly need to participate in American political, economic and social spheres was the first theoretical focus of this inquiry. I have argued that technological fluency is becoming a prerequisite for full participation in the United States (see section 1.03) and that many key social studies scholars believe that digital literacy is one of the most vital democratic skills in the twenty-first century (Bennett, 2008: Bers, 2008; Berson & VanFossen, 2008: Berson & Berson, 2003). Data collected from both the student and teacher perspectives provide strong indications that the opportunity to work with the digital text during this study did, in fact, provide students increased technological fluency.

First, over 20% of the students in the digital case studies reported that the technology skills practiced during the human rights unit were the most important academic skills that they developed while more than a third of students in the digital case studies explicitly cited the opportunity to work with a digital text as the most positive aspect of the human rights unit. The quantitative analysis of student survey data also revealed that students in the digital case studies reported enjoying the use of technology in the classroom at significantly lower levels than students in the print case studies. However, students in the digital case studies also reported finding the human rights unit relevant at significantly higher rates than students in the print case studies. As discussed in section 4.02, this seemingly contradictory report of the digital text as both a negative

and positive experience likely indicates that students were challenged by the additional academic skills required to work with the digital text but also experienced that challenge as relevant or worthwhile.

Importantly, both teachers very clearly articulated their belief that the digital text provided their students the opportunity to practice more sophisticated academic skills during the reading experience as well as during the process of creating learning products. Further, both teachers indicated that they believed the increased technological fluency provided by the digital text created a more challenging and relevant learning experience that was also more applicable beyond the context of the classroom for their students. Thus, the teacher interview data provides the strongest indication that the digital text was, indeed, supporting the kind of situated learning (Brown, Collins & Duguid, 1989) that immerses students in classroom practices that may readily translate to contexts beyond the classroom. An optimistic interpretation of this data could infer that such situated learning can be translated to democratic participation. However, more longitudinal data is necessary to confirm the implications of these findings for future democratic engagement. Finally, both teachers expressed their own preference for continuing to work digitally-- despite the unique challenges the digital text posed for their instructional practices. Both teachers also offered their intuited belief that students preferred to work digitally regardless of the increased challenges experienced in the classroom and expressed in student survey data.

Importantly, technological fluency is a prerequisite for developing the more cognitively complex and vital skill of digital literacy. The results of this data analysis did

not provide explicit evidence that students in the digital case studies were developing digital literacy in addition to greater technological fluency. However, the limitations of the research design-- which observed a single unit as well as students' very early experiences with a digital text-- did not lend itself to providing the longitudinal data that would offer greater evidence of how digital technologies may or may not support digital literacy in the social studies classroom.

Further, I have argued that the development of digital literacy must be guided by the expertise of the social studies teacher in the classroom. The powerful role that the teacher plays in mediating learning in the classroom was quite evident in the classroom observation data (see section 4.05) as well as the student artifact data (see section 4.03). Therefore, the evidence provided here seems to suggest that integrating a digital text, or a similar technology, in the social studies classroom can provide a rich opportunity for the development of digital literacy. However, successfully honing such a skill will ultimately depend greatly on how the teacher chooses to address digital literacy in the classroom.

5.02 Implications for Student Engagement

The potential for the use of a digital text to increase student engagement in the social studies classroom provided the second major theoretical framework for this research inquiry. The analysis of the multiple and complimentary data sets collected for this inquiry provided strong evidence that student engagement was indeed supported by the use of the digital text. The aforementioned statistically significant increase in students' perceptions of relevance for the human rights unit when they worked with the digital text, as well as the substantial number of students who reported the digital text to

be the most positive aspect of their experience with the human rights unit, provide strong indications that students in the digital case studies were, indeed, willing to "exert the effort necessary to comprehend complex ideas and master difficult skills" that Fredricks, Blumenfeld and Paris (2004) argue is a definitive aspect of cognitive engagement (p.60). The student survey data also provided evidence that students in the print case studies found the experience of reading the human rights content more challenging than students in the digital case studies. Again, this data seems to suggest that as students gained greater technical proficiency with the digital text, they were offered additional support for the reading experience.

The classroom observation data also provided extensive evidence that the digital text supported behavioral engagement for the following indicators: effort or investment in learning; collaborative learning that supports student autonomy in the classroom; and student participation in their own learning as demonstrated by the frequency and quality of student comments on academic content. Additionally, the belief expressed by teachers that the digital text provided more opportunities for differentiation and greater support for diverse learning styles also suggested that more students were engaged by the digital text than the print text.

Despite these strong indications that the digital text did support higher levels of student engagement in the classroom, some important countervailing evidence suggested that the digital text either posed substantial new challenges, or did not provide a significantly different academic experience from the print text. First, students' ability to comprehend and summarize the main ideas of the human rights content for the open-

ended student survey data was remarkably similar across all four case studies, regardless of the type of text used. In parallel, the analysis of student artifacts revealed little discrepancy in how students expressed relevant, analytical thinking in writing by type of text used. Further, the classroom observation data offered no evidence that the use of a digital text increased the frequency of content-related questions. Thus, these indicators of cognitive engagement showed no evidence that the use of a digital text, or a similar technology, might support student engagement in the classroom.

The classroom observation data and teacher interview data both indicated that the use of digital technology in the classroom created unique and significant classroom management challenges. Specifically, the use of digital technology provided many new opportunities for "off-task" behavior because students were often distracted by the additional opportunities to explore the digital functionalities of the iPad platform rather than engage with an academic task. Despite this clear evidence, higher levels of pronounced disengagement such as sleeping during class or remaining off-task from academic work for an extended period of time was observed in the print case studies. Therefore, future research might more explicitly focus on the relative gains in student engagement versus the level of disruptive classroom management challenges posed by the integration of digital technology in the classroom for a better understanding of the benefits and tradeoffs for the classroom learning environment.

5.03 Implications for Equity

The third, and final, theoretical framework that guided this research inquiry was the potential for the integration of digital technologies to mitigate some of the persistent

inequalities experienced by students of poverty and students of color in the public education system. The gateways for full participation in American society in the twenty-first century increasingly require technological fluency and digital literacy (Bennett, 2008; Bers, 2008; Berson & VanFossen, 2008; Berson & Berson, 2003). Therefore, providing students of poverty and student of color the opportunity to develop technological fluency and digital literacy could also support greater participation in American institutions by these historically marginalized demographics.

Importantly, this data provided evidence that students of color and white students had quite similar experiences of and interactions with both the print text and the digital text. Although students of color and non-native English speakers reported feeling academically challenged by the human rights unit at significantly higher rates than white students did, this relationship persisted across both digital and print case studies and therefore, seemed more directly linked to the significantly lower academic expectations reported by students of color and non-native English speakers than particular barriers posed by the use of digital technology in the classroom. More hopefully, students of color reported very similar experiences of technology in the classroom as well equivalent levels of cognitive engagement across multiple indicators.

Further, the classroom observation data-- which very explicitly focused on the experiences of students of color during the data collection phase—provided many indications that students of color and white students had strikingly similar experiences of both the unique academic challenges and the unique benefits of the digital text. In fact, the only clear discrepancy in experience observed to fall along a relevant demographic

fault line was an increased benefit to non-native English speakers provided by the multimodal learning supports embedded in the digital text.

While the larger implications for equity in the public education system and increased participation in American political and economic institutions supported by greater technological fluency and digital literacy among students of color and poverty cannot be accurately assessed within the limited scope of this research design, the closely parallel experiences reported by students of color and white students-- and further confirmed by the classroom observation data-- seem to indicate that digital technologies could contribute to greater access to twenty-first century academic skills in the classroom for all students that may be broadly translated to greater participation beyond the classroom. Therefore, future research might fruitfully focus on if, and how, students of color and poverty-- who have significant access to digital learning experiences in the classroom over a sustained period of time-- translate those experiences to participation beyond the classroom.

5.04 Methodological Implications

The research inquiry undertaken here was intended to provide some empirical evidence of the differences and similarities between how high school students perceive and experience a digital text versus a print text in the social studies classroom in response to the lack of extensive empirical research in the existing literature on digital learning. To this end, the conclusion that digital technology in the social studies classroom can provide relevant curriculum and instruction and support student engagement in learning academic content and skills for a diverse student population was sustained by substantial

empirical data drawn from complimentary data sets. Nevertheless, there is much more to understand about the potential benefits and drawbacks of integrating digital technologies in the classroom. This is especially important to note from a methodological standpoint because by nature, the implications of case study research are largely limited to their specific context. Therefore, future research should include more longitudinal data as well as data from various other classroom contexts in order to more broadly assess the impact of a digital text on student learning.

In addition to the empirical evidence offered here, perhaps the most significant methodological contribution this research offers is the design's intentional focus on the contrast between digital and print case studies that shared the same social studies teacher. Accounting for the powerful role of the teacher in shaping the entire learning environment, as well as in guiding students' particular experiences with the text, provided distinct insights into how a digital text offers unique academic and engagement benefits at the same time that it poses new challenges. These findings would simply not be as powerful if data from digital and print case studies with different teachers had been compared because the role of the teacher versus the role of the text would have been quite difficult to distinguish.

On a similar methodological note, the participating teachers included in this research study were veteran educators, who were both experienced with digital technology, and enthusiastic about integrating a new technology in the classroom. The persistent classroom management challenges posed by the digital text and the considerable investment of class time required to successfully integrate the digital text are

both especially noteworthy due to the considerable expertise each of these teachers brought to the learning environment. Given that the data provided by this inquiry further confirmed the pivotal role that the classroom teacher plays in mediating students' experiences and perspectives, educators who would like to successfully integrate similar digital technologies should consider the value of identifying enthusiastic and technologically proficient teachers. Conversely, teachers with less classroom experience or technological fluency will likely require more upfront training and ongoing support to successfully integrate digital technologies in the classroom.

5.05 Limitations of Research

Despite the empirical and methodological contributions acknowledged above, this research design was also significantly limited in its ability to offer conclusive implications for how digital learning opportunities might impact democratic participation in the United States or address the persistent equity challenges experienced by students of color and students of poverty in the public education system. A more robust understanding of how the development of technological fluency and digital literacy might influence future democratic engagement requires more longitudinal data than the nine-day digital pilot undertaken here could provide. Similarly, a thorough understanding of how students of color and students of poverty may or may not benefit from digital learning opportunities in the public education system requires longitudinal data well beyond the scope of that provided by this modest research design. Nevertheless, this data analysis suggests some reason for optimism that the academic benefits and student engagement supported by the successful integration of the digital text may be sustained

over the course of a student's high school social studies education. Future research is necessary to determine if and how such benefits might be translated into political participation beyond the classroom, regardless of a student's race or socioeconomic status.

Another significant limitation to this research design is the lack of data collected from student interviews or focus groups. Therefore, similar research undertaken in the future should more explicitly focus on how students in conversation articulate their perspectives and experiences with digital technologies for a more complete understanding than the student perspectives gathered through the survey, classroom observation and teacher interview data provided here.

5.06 Recommendations

Despite these substantial limitations, this research does recommend integrating a digital text in the high school social studies classroom due to the potential academic and engagement benefits supported by the data. In fact, the results of this research provide an affirmative response to the following important question posed by Mason, Berson, Diem, Hicks, Lee & Dralle's (2000): "Does technology allow students to learn in ways that they could not without technology, or to learn in more authentic or meaningful ways?" To this end, the data clearly indicated that the digital text supported increased technological fluency, provided a more supportive reading experience and enabled the creation of more sophisticated learning products than the print text. Students in the digital case studies also exhibited higher levels of student engagement for several key indicators. Students in the digital case studies perceived the content and skills practiced during the human rights

unit to be more relevant than students in the print case studies and offered more content-specific comments during classroom observations. In parallel, students in the digital case studies demonstrated greater individual effort or investment in learning and more collaborative learning with their peers.

However, several caveats to theses academic benefits provided by a digital text should be restated. First, both students and teachers experienced the digital text as a more challenging, and often more frustrating, learning experience. Students in the digital case studies struggled with the transition to using technology for academic purposes rather than recreational pursuits while the participating teachers were frustrated by the new classroom management challenges experienced in their digital case studies. The digital experience also required a much more substantial investment of class time than the print experience. In short, while the digital text was clearly a useful tool, the limitations of its role in the learning environment were also demonstrated. Again and again, the data indicated that these limitations were navigated by the expertise of the classroom teachers. Thus, while this research recommends using a digital text to replace traditional print text materials for the reading experience and the creation of learning products, it also strongly recommends integrating this tool within the context of a classroom where the primary learning dynamics occur through human relationships with teachers and peers.

These findings further clearly recommend identifying teachers who are comfortable with technology and willing to invest considerable time in order to successfully integrate a digital text. Additionally, teachers will likely require ongoing professional development and support from other educators in similar contexts to sustain

successful technology integrations. If teachers are able to collaboratively develop new instructional strategies for addressing the challenge of explicitly teaching technological fluency alongside content, as well as new management strategies to address the significant classroom management challenges posed by the use of digital technology, the potential benefits of a digital text are far more likely to be realized. In other words, the success of a digital technology tool in the classroom will likely always depend on the teacher.

Despite the considerable challenges posed by the digital text, this research indicated that both teachers and students preferred the digital experience to the print experience. Thus, this research suggests that the digital experience was often both more challenging and more rewarding for the participants in this research study. In light of this conclusion, this study recommends more empirical research on integrating digital technologies in the K-12 social studies classroom. Both data from diverse classroom contexts and longitudinal data on students' perceptions and experiences would usefully extend the preliminary findings on affordances, engagement and equity offered by the very early experiences of four social studies classes working with a digital text provided by this research.

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APPENDIX A

CONTENT EXCERPT FROM UNIT: *COMPETING VISIONS OF HUMAN RIGHTS*

The following excerpt from the first chapter of the human rights unit is intended to provide an understanding of the content addressed in both the digital and print case studies during the course of this pilot research.

Introduction: What are Human Rights?

A political dissident is jailed in Myanmar without being given a fair trial. A massive oil leak in the Gulf of Mexico threatens the livelihood of fishermen on the Atlantic coast. A child is kidnapped, drugged, and forced to take up arms in the conflict in the Democratic Republic of the Congo. Young Muslim students are banned from wearing traditional headscarves in French public schools. A man in India without access to clean water dies of a treatable disease. A guard looks on as an inmate is assaulted in a Texas jail. A woman working at a business firm in New York is paid less than her male counterparts.

Each of these scenarios remind us of how vulnerable each human being is to injustice. The scenarios raise two fundamental questions: What are the basic freedoms and entitlements of every human being? How should we protect these freedoms and entitlements? It is within the idea of human rights that we can look for answers to these questions.

What are human rights? Human rights are fundamental rights and freedoms that all people are entitled to simply by the fact that they are human. Today, it is generally accepted around the world that governments have a responsibility to ensure and protect certain rights for their people. Human rights laws mainly focus on how governments treat their people, but also make governments responsible for protecting individuals from abuse by other individuals.

Over the past several decades, discussion about human rights has permeated international relations, creating a surge in treaties, institutions, and social movements. Human rights have been at the center of many political struggles, and are a means to protect the powerless from the powerful.

Yet while the general principle of human rights has been broadly accepted, human rights abuses persist and questions about the subject remain hotly contested. What exactly are human rights? Given the diversity of values held by people around the world, is it possible to agree on a definition of human rights? Should some rights take priority over other rights? What action should be taken to protect human rights? These questions have significant implications for the policy decisions of governments and ultimately for the lives of individuals.

In the coming days, you will have the opportunity to explore these questions and consider the direction of U.S. human rights policy. In Part I of the reading you will trace the historical progression of human rights, marking the influence of major events in world history. You will also consider the creation of the first international human rights agreements. In Part II you will explore current challenges and the large cast of actors that influence human rights, such as governments, the United

Nations, and individuals that drive social movements. In Part III you will consider five case studies that highlight controversial topics in human rights. Ultimately, you will have the opportunity to develop your own ideas about how U.S. policy should address human rights.

Part I: A Brief History of Human Rights

There is debate about the nature and scope of human rights. Some believe that human rights only encompass individuals' civil and political freedoms. Civil and political rights include the right to life, liberty and personal security, freedom from slavery, torture and arbitrary arrest, as well as the rights to a fair trial, free speech, free movement, and privacy. Others argue that there are economic, social, and cultural rights as well. These include economic rights related to work, fair pay, and leisure; social rights concerning an adequate standard of living for health, well-being and education; and the right to participate in the cultural life of the community. International consensus is growing that human rights should encompass civil and political rights, as well as social, economic, and cultural rights. This is often referred to as the "full spectrum" of human rights.

While the idea that governments should ensure equal rights for all of their citizens is relatively new, questions about what rights are, to whom they are extended, and how they should be protected have been debated for centuries. What are the religious and philosophical origins of human rights?

Many of the values underlying current ideas about human rights may be traced through history and across cultures and religions. For example, the world's popular religions have long promoted human dignity and individual worth. The ancient texts of Hinduism promote the sacredness of life; Buddhist teachings emphasize equality and encourage compassion towards others; Islam highlights charity and justice; the scriptures of Judaism pose guidelines for ethical behavior; and Christianity underscores the importance of reducing human suffering and loving others as one would love oneself.

For thousands of years, secular philosophies have also addressed questions of moral responsibility. For example, many ancient Chinese philosophers, rooted in a belief of common humanity, promoted respect for others. They also articulated ideas about the duty of a government to be attentive to the well- being of its people. Many precolonial African societies emphasized the importance of the well-being of individuals and communities and sought to shield people from mistreatment by those in power. For example, the Akamba of East Africa were entitled to strip oppressive chiefs of their power.

Ideas about human dignity, efforts to improve the human condition, and attempts to be treated justly by rulers emerged and evolved throughout diverse societies and regions of the world over the course of thousands of years. But much of the world's history is darkened by brutal conquest, religious persecution, subjugation of women and minorities, and widespread systems of slavery and serfdom. It is only in the last three hundred years that governments have undertaken fundamental shifts towards protecting the rights of all individuals.

Examples of Civil and Political Rights

•freedom from slavery, discrimination, and torture
•equal protection under the law
•freedom of movement
•suffrage (the right to vote)
•freedom of thought, opinion, expression, association, and religion

Examples of Social and Economic Rights

•free basic education
•social security
•employment
•fair wages and equal pay for equal work
•an adequate standard of living (including adequate food, clothing, and housing)

Early Developments in Human Rights

Philosophies gradually emerged in some parts of the world that reframed issues of human dignity and well-being as "rights" of individuals. For example, during the seven- teenth and eighteenth centuries, philosophers in Europe asserted that men are born free, equal, and entitled to certain rights and liberties.

"Man is born free, but everywhere he is in chains."
—John-Jacques Rousseau

These new theories about the rights of individuals heavily influenced evolving ideas about the relationship between citizens and their government. Philosophers such as John-Jacques Rousseau and John Locke argued that these "natural rights" (rights granted by God at birth) are be- yond the reach of government, and therefore a government's power over its people should not be absolute. Following this line of reasoning, some philosophers affirmed that government must also secure and protect the rights of its citizens and that individuals should be en- titled to elect their leaders. How did evolving ideas about human rights contribute to political change?

Ideas about human rights were influential in several struggles against autocratic rule, such as the American Revolution and the French Revolution. American revolutionaries justified their split from Great Britain on the basis that the king did not adequately ensure their rights; the colonists claimed this entitled them to revolt and establish a new

government. The United States Declaration of Independence asserted individual rights and freedoms and proclaimed that the legitimacy of government power is dependent on public support and approval. The religious influence on the origin of the rights proclaimed in the declaration is stated clearly.

> **"We hold these truths to be self- evident, that all men are created equal; that they are endowed by their Creator with certain inalienable rights; that among these are life, liberty, and the pursuit of happiness. That, to secure these rights, governments are instituted among men, deriving their just powers from the consent of the governed; that whenever any form of government becomes destructive of these ends, it is the right of the people to alter or abolish it, and to institute a new government...."**
>
> **—Introduction to the U.S. Declaration of Independence**

The U.S. Constitution and Bill of Rights (1789-91) and the French Declaration of the Rights of Man and Citizen (1789) broke new ground by proclaiming a wide array of civil and political rights, such as freedom of expression, the right to vote, and protection against arbitrary arrest and punishment. Though these documents were revolutionary for their time, they generally extended the newly proclaimed rights to only the sliver of the population that was white, wealthy, and male. In both the United States and France, gender and racial inequality remained largely unchanged, and religious discrimination persisted. Both countries practiced slavery.

Nevertheless, these philosophies of equality and justice reverberated among oppressed people, spurring movements for change, as groups sought to claim rights for themselves. For example, the successful uprising of enslaved people in the French colony of Saint-Domingue (now the country of Haiti) was partially motivated by France's refusal to extend the rights of the French Declaration to its colonies and abolish slavery. Haiti's constitution of 1801 was the first in modern history to extend universal rights to all men, not just whites.

Options in Brief

Option 1: Lead the World to Freedom

The United States was founded on the notion that individuals are entitled to liberty and the right to choose their government. These are the human rights that every human being is entitled to. Our ideas about human rights continue to inspire oppressed peoples around the world who desperately seek freedom from tyranny. As the world's superpower, we have both the opportunity and the responsibility to stand up for the human rights of liberty and democracy in every corner of the earth. We must be prepared to hold the world's perpetrators of gross human rights violations accountable for their actions. A powerful, determined United States leading the charge is the only hope for spreading liberty throughout our world.

Option 2: Work with the International Community

A strong and unified global commitment to promoting and protecting human rights is our best hope for improving the well-being of individuals and maintaining peace and security across the globe. The time has come for the United States to take a fresh approach to rights. We can begin by embracing a wider understanding of human rights, including economic, social, and cultural rights. Nothing sends a stronger message than a unified international commitment to human rights. The United Nations has the legitimacy and capacity to develop and maintain a long-term effort to promote human rights. We must increase our commitment to the UN, and take a leadership role to strengthen and support its effectiveness in promoting human rights. We must stand together with the international community against gross violations of human rights whenever and wherever they surface, and bring perpetrators to justice.

Option 3: Act Only When U.S. Interests are Directly Threatened

We should not be swept up in the international human rights frenzy that is dominating world politics. Human rights are nothing more than a distraction. By focusing on the inter- national community's idea of human rights, we risk losing sight of what is truly important for our country: a strong economy, national security, and protecting our own constitutional freedoms and way of life. Our top priority should be to make our country stronger and safer, not to seek to change the world. We can speak out against human rights abuses, but unless abuses directly threaten our security, risking U.S. lives and spending huge sums of money is not sensible. We must always approach global human rights problems by placing the interests of our country first.

Option 4: Focus Our Efforts at Home

The only place that we can truly improve human rights is on our own soil. Throughout our country, citizens are demanding change, calling for better education, access to health care, and improved working conditions. These economic, social, and cultural rights are human rights that every U.S. citizen deserves. There are other good reasons to focus on human rights at home. The U.S. quest to promote human rights abroad has too often led us into costly foreign policy failures. We should speak out against violations of human rights around the world. But just as we would never accept another country telling us how to govern ourselves, we must refrain from the temptation to impose any single system on other countries. So let us begin at home and make human rights our top domestic priority. We can lead by example, ensuring that every U.S. citizen enjoys a life of dignity, freedom, and equality.

APPENDIX B

TIMELINE OF DATA COLLECTION

The table below offers an overview of key data collection steps implemented during the course of this research. Events are displayed & briefly described in their chronological order of occurrence.

Date	**Event**	**Notes/Description**
8/29	• Met with teacher participants for 1.5 hours to discuss pedagogical approach to unit and finalize timeline of data collection.	• Teachers signed informed consent
9/5	• Teachers sent student/parent informed consent forms home with classes.	• Almost all students had returned consent by 9/21. • Scanned informed consent for electronic record
9/14	• Email exchanges with teachers to finalize curriculum calendar & classroom observation dates.	• Added a third & fourth observation on lesson days 4 and 7 to capture more detailed data.
9/19	• Visited Greg's case studies to introduce study & prepare students for videoed classroom observations/answer questions from students & emphasized the confidentiality of data collected & the voluntary nature of participation.	• Conducted a pilot video observation for technical quality.
9/21	• Visited Brian's case studies to introduce study & prepare students for videoed classroom observations/answer questions from students & emphasized the confidentiality of data collected & the voluntary nature of participation.	• Conducted a pilot video observation for technical quality

(Timeline Continued)

Date	Event	Description/Activity
9/25	• Classroom Observation #1 of Greg • 3A (digital) & 4A (print) • Day 2 of HR lesson	• Students read subsections of text in pairs or threes and created slides (digital) or posters (print) with main ideas & inferences from their assigned subsection to share with the class next class
9/27	• Classroom observation #1 of Brian • 2A (digital) & 4A (print) • Day 2 of HR lesson	• Students watch three videos of human rights experts defining human rights on iPads individually (2A) • Students watch three videos of human rights experts defining human rights on Smartboard at the front of the room as a class (4A) • Students work in groups of 2, 3 or 4 to read a subsection of the printed text and create posters with main ideas from their assigned section to present to the class

(Timeline Continued)

Date	Event	Notes/Description
10/1	• Classroom Observation #2 for Greg • 3A (Digital) & 4A (Print) • Day 4 of HR Lesson	• Students present Keynote slides in 3A (digital) of key ideas/subtext from subsection of text • Use Apple TV & iPads to present to class • Teacher explains homework writing assignment (3A & 4A) • Class reads digital/print text in small groups of 3-4 • Answers questions on a printed (hardcopy) worksheet (3A & 4A)
10/3	• Classroom Observation #2 for Brian • 2A (digital) & 4A (print) • Day 4 of HR lesson	• 2A (digital) groups of 3-4 on/complete digital slides of main ideas/key definitions from group's subsection of text • Groups present (2A) • 4A (print) students work in small groups to rank their human rights priorities • Groups respond to three case studies on human rights brief reading/writing prompt worksheet
10/11	• Classroom Observation #3 for Brian • 2A (Digital) & 4A (Print) • Day 7 of HR Lesson	• Students work in groups with digital or print text to prepare a project presentation on a U.S. policy option for human rights
10/16	• Classroom Observation #4 for Greg • 3A (Digital) & 4A (Print) • Day 8 of HR Lesson	• U.S. Senate simulation (debate) on human rights policy options.

(Timeline Continued)

Date	Event	Description/Activity
10/18	• Classroom Observation #4 for Brian • 2A (Digital) & 4A (Print) • Day 8 of HR Lesson	• U.S. Senate simulation (debate) on human rights policy options.
10/18	• Student Survey administered in Greg's print & digital case studies	• Researcher proctored the survey; emphasized confidentiality of responses & voluntary participation; remained to clarify student questions during survey
10/22	• Student Survey administered in Brian's print & digital case studies	• Researcher proctored the survey; emphasized confidentiality of responses & voluntary participation; remained to clarify student questions during survey
11/3/12	• Interview with Greg from 12:30 to 1:30 p.m.	• Audio recorded with teacher permission • Transcribed 11/5 to 11/18
11/7/12	• Interview with Brian from 4:00 to 5:00 p.m.	• Audio recorded with teacher permission • Transcribed 11/8 to 11/18
12/7/12	• Sent Greg & Brian electronic copy of full interview transcript for their review	• Received feedback of "no changes" from both teachers by 12/12/12.

APPENDIX C

STUDENT SURVEY INSTRUMENT

The student survey instrument included below was developed to elicit individual student responses to the following components: key demographic characteristics; access to relevant digital technologies and technology skills; student academic expectations; and student attitudes to social studies. The analysis of the survey data provided some key indications of student engagement in response to the research inquiry.

Name_____ Period _____ Teacher _____

1. **Place a check mark beside any of the following technologies that you or someone in your household owns**. (You may check more than one box.)

	YES
a. Computer	
b. Laptop	
c. Internet Access	
d. SmartPhone	
e. iPod / iPod Touch	
f. iPad	
g. Tablet (Slate, Xoom, Playbook)	
h. Kindle	
i. NOOK	

2. **Check the box that <u>best</u> describes how often you use each technology**:

	Almost Never	**At least once a month**	**At least once a week**	**Almost Daily**
a. Computer				
b. Laptop				
c. Internet Access				
d. SmartPhone				
e. iPod				
f. iPad				
g. Tablet (Slate, Xoom, Playbook)				
h. Kindle				
i. NOOK				

3. I have read a digital text (iBook, Kindle, Nook, etc.) at home or at school before studying human rights in this World History class. **(Please check your response).**

YES	**NO**

4. When I use technology at home or at school, I most often feel that….

	Strongly Disagree	Disagree	Agree	Strongly Agree
a. My technology skills are strong	1	2	3	4
b. My technology skills are **stronger** than most other students my age	1	2	3	4
c. My technology skills are **not as strong** as most other students my age	1	2	3	4

5. I usually enjoy:

	Strongly Disagree	Disagree	Agree	Strongly Agree
a. Doing school work on computers	1	2	3	4
b. Taking social studies classes	1	2	3	4
c. Taking this World History class	1	2	3	4
d. Learning about human rights in this class	1	2	3	4

6. **When we were studying human rights in this class, I learned**….

	Strongly Disagree	Disagree	Agree	Strongly Agree
a. Information that is important to me	1	2	3	4
b. Information that I will be able to use outside this class	1	2	3	4
c. Skills that I will be able to use outside this class	1	2	3	4

7. **In this class, I have felt challenged by….**

	Strongly Disagree	Disagree	Agree	Strongly Agree
a. The information I am learning about human rights	1	2	3	4
b. The work we do in class	1	2	3	4
c. The technologies we use in class	1	2	3	4
d. The homework	1	2	3	4

Please write your response in the box provided.
Feel free to ask questions or for clarification!

8. The most important **information** I learned during the human rights unit was:	
9. The most important **academic (school) skill(s**) I practiced during the human rights unit was:	
10. The **best** part of the human rights unit was:	
11. The **worst** part of the human rights units was:	

12. After learning about human rights in this class, I am more likely to: (Place a check mark next to all activities you might do in the future. You may check more than one box).

	YES
Talk about human rights with my family or friends outside of this class.	
Choose to learn more about a human rights issue on my own.	
Participate in a school activity focused on human rights outside this class.	
Participate in a school club focused on human rights issues.	
Volunteer with a human rights organization outside of this class.	

13. I am (Please check your response):

Male	
Female	

14. I would describe my race or ethnicity as (check all that apply):

Asian	
American Indian	
African American	
Pacific Islander	
Hispanic/Latino	
White	
Other:	

15. The language I usually speak at home or with my family members is:

16. My current grade level is (Please check your response):

10	
11	
12	

17. I think my grade in World History this semester will probably be a (Please check your response):

A	
B	
C	
D	
F	

APPENDIX D

STROBE[1] CLASSROOM OBSERVATIONAL PROTOCOL

The classroom observational protocol included below was used for data collection during the sixteen classroom observations included in this research design. The protocol uses repeated observation cycles to capture classroom events during timed intervals to provide a representative sample of classroom behavior over time.

Date:	Time:	Lesson Day:
Instructor:	Number of Students:	Students of Color:

15-minute Interval of Observation

Field Notes:

Instructional Method:

Structure of the Class:

Activity:

Teacher's Activities:

Students On-Task:

Student Academic Questions Posed:

[1] O'Malley, Moran, Haidet, Seidel, Schneider, Morgan, Kelly & Richard (2003)

Student Comments on Academic Content:

Four Students Chosen at Random:

Description of Student #1's Observed Activities:

Description of Student #2's Observed Activities:

Description of Student #3's Observed Activities:

Description of Student #4's Observed Activities:

APPENDIX E

SAMPLE STUDENT ARTIFACTS

The student artifacts included below were selected from each case study, respectively, to reflect a median score for the case study. The student artifacts were created as the final written assessment of student learning on the last day of the human rights unit in each of the four case studies. Student artifacts responded to the following prompt: What human rights policy option should the United States pursue and why? The quality of thought reflected in the student artifacts was assessed using the critical thinking rubric included in Appendix F.

Greg's Digital Case Study
Sample Student Artifact

The best option to support is option #3 because it describes what the United States of America needs to do in order to make the US a better place, while only selectively helping others in times of great need. Option three explains that we should not join the ICC because they force the US to fulfill obligations that we should not have too. Also the United States should focus on its own needs, before attempting to help another country with its needs. By helping ourselves we can actually serve as an example to others so that they can base their policies around ours.

One historic example of the US serving as an example is back in the 1950s when we granted land to Isreal and they modeled their government and policies after ours, and thus succeeded as a country. Being a positive example for others not only helps the effort worldwide, but the efforts on the home front all along avoiding the ICC.

Basing decisions a clear calculation the United States Of America will enable our country to concentrate resources that matter most to the United States. By respecting value of others we will generate and increase cooperation with other countries on critical issues.

Other countries may claim that not always helping others is an act of selfishness, however, in actuality, not everyone needs our help and in fact, we very much need to help ourselves. Overall, by helping others we are serving as a positive example to others.

Greg's Print Case Study
Sample Student Artifact

The United States should only act when it is being directly threatened because it needs to be more concerned on our economy, national security, and protecting our constitutional freedoms. Option 4 will improve human rights and will set an example for other countries. There is a full spectrum of rights. Option 4 does not join the ICC. It does not ratify international human rights treaties. This option will only focus on the U.S. and will ignore other countries, but by doing so it will improve the U.S.

When focused on our country we will have more time to improve human rights. Reason one: The U.S. will be a better place. Response: There is a full spectrum of rights and everyone will have at least right in which they agree on. Reason two: It doesn't agree/approve on the ICC. Response: The ICC (International Criminal Court) says that if you commit a crime in another country you could go to jail/go to trial for the crime you commit. Violates human rights.

Many people may think its selfish to focus on our own country, but if we want to provide a better country for our people then we will have to focus on our country Finally, option 4 is the best option because it does not approve on the ICC, it has the full spectrum of rights, and it doesn't ratify human rights.

While option 1 only focuses on civil and political rights option 4 has a full spectrum of human rights and believes that every human should have every right. Option 2 believes we should join the ICC when issued in major treaties, but if we join it the full spectrum of human rights will be violated and therefore there would be no reason why to have a full spectrum of rights. Option 4 will improve human rights and make the U.S. a better place for everyone.

Brian's Digital Case Study
Sample Student Artifact

I think that option one is the best option for the United States. I agree with option one because I believe that we have the right to vote and other civil and political rights. Some issues of the human rights are that people are argueing that we should have more rights like we should have food provided to us if we don't work. My option is what freedom and rights that we all get. For example the freedom we have is the freedom of choosing your own religion and your own faith that you believe in. The rights that each person gets is the right to vote. The political rights says that every human being has the human rights entitles to them.

The option I choose is basically what rights and freedom does every human being get. I think this option is the best because I agree that each person should know what rights they are entitled to. The reason I choose option one is because of how much human rights does each person get. Some of the human rights are voting and choosing our religion and the right to be free. In the option I choose says that these are human rights that are entitled to humans.

The arguments against my option are that human rights are only including civil and political rights and not economic or social. Another argument is that if someone is starving what good would it do to vote. I aggre that option one should focus on economic and social. I disagree on the second argument because we are not responsible for feeding others that are starving we are just responsible in giving people their human rights.

I think that option one is the best policy option for the United States. I choose option one because it shows the rights that each of us get.

Brian's Print Case Study
Sample Student Artifact

The USA is supposed to be the most strongest, wealthiest country in the world, but if it really is the strongest and wealthiest country in the world then why can't so many people afford to live here. We should focus on our security and economy before telling other countries how to improve theres. Why would we help other countries with their human rights when we as one country have a bigger issue. We should only interfere when the U.S. is being threatened. If we focus on other countries then the U.S. will in the end be the one that needs the most help.

Well now the question is what should we do. I believe we must focus on our unemployment rate, which is now lower than it was four years ago. Also move away from international human rights and focus on our national security. We must not join the ICC, because it will give soldiers more motivations to prosecutions and that will violate their constitutional rights. If we do all this then the people living here can ultimately have a better and protected life.

Our resources are very limited and should only be used to protect the U.S. If we try to help countries with there human rights, other countries might not have the same values as the U.S.A. We should respect there cultures human rights. If we interfere and somehow go to war lives might be lost and we would be spending a lot of money that we don't have right now. But most importantly human rights treaties would threaten the constitution of the United States.

If we only act when the U.S. is threatened, we will be better off. We don't have enough resources to lead the world to freedom or the right to tell countries how to run there society. But also if we work with the UN it would be a waste of time. The UN operates slowly, innificient and doesn't cover foreign policy issues. So if we focus our efforts at home but do not interfere when the U.S. is threatened then it would make the United States seem a little bit weak.

So as you can see this is the best option for the U.S. right now. To focus everything on our country, to leave other countries to figure out how to live without our help. Because even if we help other countries, whey would they take advice from a country that has the same problems and haven't done anything about it.

APPENDIX F

CRITICAL THINKING ASSESSMENT RUBRIC[2]:

The rubric displayed below was drawn from Northeastern Illinois University's Critical Thinking Rubric (http://www.neiu.edu/~neassess/pdf/CriThinkRoger-long.pdf). This rubric was used to assess the quality of student thinking displayed in the student artifact data collected for this research.

Indicator	**Exceeds 4**	**Meets 3**	**Emerging 2**	**Does Not Meet 1**
Responds to Prompt's Main Ideas	Clearly responds to prompt and identifies key ideas. Identifies or explains complexity of embedded / inferred issues or questions.	Successfully responds to prompt & identifies main ideas but does not address inferred issues or raise questions.	Identifies main issues in response but does sufficiently address prompt or explain position.	Does not respond to prompt or fails to identify main ideas or explain position appropriately.
Frames an Argument	Articulates a clear and precise personal point of view. Uses appropriate depth of evidence to support. Acknowledges complexity, objections and rival positions.	Articulates a clear and precise personal point of view with some supporting but less effective evidence. Does not acknowledge complexity, objections or rival positions.	Articulates a vague or indecisive point of view without supporting evidence.	Does not respond or fails to clearly express own point of view.
Interprets Content	Offers nuanced and original interpretations of critical aspects of the the issue.	Successfully identifies and offers more limited or less original interpretation of critical aspects of the issues.	Identifies some but not all critical aspects and offers little interpretation.	Does not respond or fails to interpret critical aspects of the issues.
Creative Thinking	Offers original, appropriate and compelling interdisciplinary or prior-knowledge connections.	Offers appropriate interdisciplinary or prior- knowledge connections.	Interdisciplinary or prior- knowledge connections are inferred but not clearly offered or appropriate.	Does not respond or fails to make interdisciplinary or prior- knowledge connections.

[2] Adapted from Northeastern Illinois University's Critical Thinking Rubric (Retrieved at: http://www.neiu.edu/~neassess/pdf/CriThinkRoger-long.pdf).

APPENDIX G

SUMMARY of CRTICIAL THINKING QUALITY of STUDENT ARTIFACTS by CASE STUDY

Teacher A Summary of Critical Thinking Quality of Student Artifacts by Digital or Print Text

	Student Demographics	**Primary Language**	**Addresses Prompt**	**Frames Argument**	**Interprets Content**	**Creative Thought**	**Total**
Digital Case Study							
	Male/ Student of Color	Non-English	2	2	3	1	8/16 (50%)
	Female/ Student of Color	Non-English	3	2	1	1	7/16 (43%)
	Female/ White	English	3	3	1	1	10/16 (62%)
	Male/ White	English	3	3	2	2	11/16 (68%)
Averages			2.75 (68%)	2.5 (62%)	2.5 (62%)	1.25 (31%)	**9/16 (56%)**
Print Case Study							
	Female/ Student of Color	Non-English	2	2	2	1	7/16 (43%)
	Male/ White	English	2	3	3	3	11/16 (68%)
	Male/ White	English	2	2	2	2	8/16 (50%)
	Female/ Student of Color	Non-English	3	3	3	2	11/16 (68%)
Averages			2.25 (56%)	2.5 (62%)	2.5 (62%)	2 (50%)	**9.25/16 (58%)**

Teacher B Summary of Critical Thinking Quality of Student Artifacts by Digital or Print Text

	Student Demographics	Primary Language	Addresses Prompt	Frames Argument	Interprets Content	Creative Thought	Total
Digital Case Study							
	Male/ White	English	3	4	3	3	13/16 (81%)
	Male/ White	English	2	2	1	2	7/16 (43%)
	Female/ Student of Color	Non-English	3	3	2	1	9/16 (56%)
	Female/ Student of Color	Non-English	3	3	3	1	10/16 (62%)
Averages			2.75 (68%)	3 (75%)	2.25 (56%)	1.75 (43%)	**9.75/16 (61%)**
Print Case Study							
	Male/ Student of Color	Non-English	3	3	3	2	11/16 (68%)
	Female/ Student of Color	Non-English	3	3	3	2	11/16 (68%)
	Female/ White	English	4	3	3	3	13/16 (81%)
	Male/ White	English	3	3	2	3	11/16 (68%)
Averages			3 (75%)	3 (75%)	2.75 (68%)	2.5 (62%)	**11.5/16 (71%)**

APPENDIX H

TEACHER INTERVIEW PROTOCOL

The interview protocol displayed below guided the teacher interviews included in this research. The interviews consisted of a one-on-one guided conversation between researcher and participating teacher and were approximately one-hour in length.

Date:	Location:	Time:
Teacher:		

Introduction: *Thank you for your willingness to speak with me about the two different texts you have been working with in your social studies classes. Before we begin, I want you to know that this conversation will be confidential and the audio & transcripts will only be available to me, my dissertation committee and my doctoral cohort. Excerpts of this interview may be made part of the final research report, but under no circumstances will your name or identifying characteristics be included in this report. Is it all right for me to turn on the recorder now?*

Facilitating Prompts

Can you say more about that? Can you give me an example? How do you know that?

	Questions for Teacher Interview
Question 1	How would you describe the human rights unit for the class that worked with the printed text?
Question 2	How would you describe the human rights unit for the class that worked with the digital text?
Question 3	What was the most challenging part of the unit for the class that worked with the printed text?
Question 4	What was the most challenging part of the unit for the class that worked with the digital text?

	Questions for Teacher Interview (continued)
Question 5	[Explain results of quantitative survey analysis with digital case reporting significantly less enjoyment of technology in classroom.] Why do you think students reported this way?
Question 6	If you explained to your digital case that the technology was too frustrating & too time-consuming and you would not be using it for future digital units, how do you think they would respond?
Question 7	How do you feel about teaching with a digital text versus teaching with a print text?
Question 8	When you had students working with the digital text to read or to create learning products, did you feel as though the additional technology skills required and the additional multimedia features were creating cognitive noise or getting in the way of students really understanding the content?
Question 9	Did you get a sense from the final Senate simulation that there was better content acquisition in the print case study because they didn't have extra technology skills involved?
Question 10	Did you get a sense from student writing samples that there was better content acquisition in the print case study because they didn't have extra technology skills involved?
Question 11	One of the things I noticed in the classroom observations was how useful having a printed handout seemed to be at times to support students' understanding of the directions for a learning task or identifying key ideas in the reading. Can you talk about that?
Question 12	If you have the opportunity to teach this unit again, what will you change?
Question 13	How many years have you been teaching?
Question 14	What experiences do have with using technology in the classroom?
Question 15	What experiences do you have working with digital text outside the classroom?

APPENDIX I

EMERGENT THEMES from QUALITATIVE ANALYSIS of TEACHER INTERVIEW DATA

Theme	Example Evidence	Relevant Research Question
A) Digital text offered students a more engaging reading experience.	• **Teacher A**: The digital text "helped the kids stay more engaged with the reading task."	In what ways does a digital text provide high school social studies' students different affordances and academic skills than a print text?
B) Digital text and iPad platform offered students a better experience for creating learning products.	• **Teacher B:** "The advantage is it brings in lots of different types of kids…On multiple levels, the process is significantly better digitally than it is not."	Do teachers report a difference in support for diverse learning styles when a class works with a digital text versus a print text?
C) The digital text required students to use a more sophisticated skill set.	• **Teacher B:** "The students have a whole new routine. They know how to do stuff on paper. They've been doing that forever …there's some element of struggling with the tech skills."	In what ways does a digital text support different academic skills for a high school social studies class than a printed text?
D) Students in the digital text case study experienced a shift from understanding technology as primarily a tool for recreation to understanding technology as a tool for academic learning.	• **Teacher A**: "It's a recreational device, but when it becomes this work device, then it's like: 'Oh'." • **Teacher B**: "It's 'I want to try that toy', right? It's something new until they're having to wrestle with 'Well, what does that mean, how do I actually use it?'"	How do high school social studies students interact differently with a digital text than a printed text?
E) The digital text was more challenging to use and therefore, more frustrating than the print text for students.	• **Teacher A:** Students are daunted by the "extra steps involved" or frustrated "because things can sometimes go wrong".	How do high school social studies students interact differently with a digital text than a printed text?

(Continued)

Theme	Example Evidence	Relevant Research Question
F) Teachers believe that most students prefer to use digital texts & the iPad instead of print texts despite the new challenges and frustrations posed by learning the technology.	• **Teacher A**: "They may be frustrated but they understand that we're trying something. They recognize that [working in print alone] would be taking a step back…and they would be a little bit disappointed." **Teacher B:** "After a certain amount of time, the kids totally want the technology because it does make things a lot simpler….there's a lot more you can do with technology."	Does a high school social studies class perceive working with a digital text as more engaging than working with a printed text?
G) The digital text required a greater investment of classroom instructional time.	• **Teacher A: "**It takes some of your instructional time…it's another routine to teach." • **Teacher B:** "Yes, it takes longer. But that's because they're doing more and maybe getting more out of it."	How do high school social studies students interact differently with a digital text than a printed text?
H) The digital text required pedagogical approaches & instructional skills the teachers had not yet developed.	• **Teacher A: "**I don't think we've really quite figured out how to teach the reading with the digitally integrated book as much… they can go here or they could go there and oh, they can touch this, and so, sometimes you just want them to focus on the written content." • **Teacher A**: "We don't have like an explore-at-your-own-pace approach yet that we probably need in the future."	How do high school social studies students interact differently with a digital text than a printed text?

(Continued)

Theme	Example Evidence	Relevant Research Question
I) The digital text required more classroom management than the print text.	• **Teacher B:** "The other issue is control….These are toys. And once they get them, they're off and running in the digital landscape.	How do high school social studies students interact differently with a digital text than a printed text?
J) Teachers would prefer to use digital texts & the iPad instead of print despite significant challenges posed by the new technology.	• **Teacher A:** "There are things that will be really potentially powerful that we simply won't be able to do any other way."	In what ways does a digital text provide high school social studies' students different affordances and academic skills than a print text?
K) The full potential of the digital text will not be realized for several months as teachers & students learn & practice the new skills required.	• **Teacher B: "**To do this appropriately, you would have to take months, several months…once you get the routines up and students get accustomed to the technology…that's what I think it would take."	How do high school social studies students interact differently with a digital text than a printed text?

APPENDIX J

KEY DEMOGRAPHIC CHARACTERISTICS of POPULATION of CASE STUDIES

Key Demographic Characteristics of Student Population of Case Studies

	Total (N =118)
Gender [n(%)]	
Male	65 (55.1%)
Female	53 (44.9%)
Race & Ethnicity [n(%)]	
White	62 (52.5%)
Latino	36 (30.5%)
Asian	6 (5.1%)
African American	1 (0.8%)
American Indian	4 (3.4%)
Pacific Islander	6 (5.1%)
Other	3 (2.5%)
White Students v. Students of Color	
Whites	62 (52.5%)
Students of Color	56 (47.5%)
Primary Language	
English	82 (69.5%)
Spanish	26 (22%)
Other	2 (1.7%)
Student Reports Enjoying Social Studies	
White Students	46 (75%)
Students of Color	38 (69%)
Native English Speakers	63 (78%)
Non-Native English Speakers*	19 (57%)
Student Reports Enjoying World History	
White Students	62 (85%)
Students of Color	45 (80%)
Native English Speakers	68 (83%)
Non-Native English Speakers*	28 (82%)
Expects to Earn an “A” in World History Class	
White Students**	46 (77%)
Students of Color**	20 (36%)
Native English Speakers	56 (69%)
Non-Native English Speakers**	10 (29.5%)
Expects to Earn a “B” in World History Class	
White Students**	7 (11.5%)
Students of Color**	20 (36%)
Native English Speakers	15 (18.5%)
Non-Native English Speakers**	12 (35%)

*$p < 0.05$ for Chi-square Statistical Analysis of Strength of Association

**$p < 0.001$ for Chi-square Statistical Analysis of Strength of Association

Key Demographic Characteristics of Student Population of Case Studies (continued)

	Total (N =118)
Expects to Earn a "C" or lower in World History	
White Students**	7 (11.5%)
Students of Color**	15 (28%)
Native English Speakers	10 (12%)
Non-Native English Speakers**	12 (35%)
Student Reports Strong Technology Skills	
Male	56 (87%)
Female	47 (90%)
White Students	54 (88%)
Students of Color	49 (89%)
Non-Native English Speakers	29 (87%)

*$p < 0.05$ for Chi-square Statistical Analysis of Strength of Association

**$p < 0.001$ for Chi-square Statistical Analysis of Strength of Association

APPENDIX K

FREQUENCIES OF USE OF ELECTRONIC DEVICES in POPULATION OF CASE STUDIES

The table below offers a summary of the frequencies that students in the case studies reported using various electronic devices by race/ethnicity. The data below provides a comparison of digital access and technological fluency across relevant student demographic subgroups.

Frequencies of Use of Electronic Devices in Student Population of Case Studies

All Students	**Daily** n(%)	**Weekly** n(%)	**Monthly** n(%)	**Never** n(%)	**Total N = 118**
Computer	57 (48.3%)	29 (24.6%)	12 (10.2%)	19 (16.1%)	117 (100%)
Laptop	65 (55.1%)	23 (19.5%)	5 (4.2%)	24 (20.3%)	117 (100%)
Internet	104 (88.1%)	10 (8.5%)	1 (0.8%)	3 (2.5%)	118 (100%)
SmartPhone	78 (66.1%)	5 (4.2%)	3 (2.5%)	30 (25.4%)	116 (100%)
iPod	71 (60.2%)	15 (12.7%)	11 (9.3%)	20 (16.9%)	117 (100%)
iPad	20 (16.9%)	23 (19.5%)	9 (7.6%)	65 (55.1%)	117 (100%)
Tablet	4 (3.4%)	8 (6.8%)	4 (3.4%)	102 (86.4%)	118 (100%)
Kindle	0 (0%)	7 (5.9%)	4 (3.4%)	107 (90.7%)	118 (100%)
Nook	0 (0%)	1 (0.8%)	2 (1.7%)	115 (97.5%)	118 (100%)
Whites					
Computer	33 (54%)	13 (21%)	6 (10%)	9 (15%)	61 (100%)
Laptop	36 (58%)	14 (23%)	2 (3%)	10 (16%)	62 (100%)
Internet	56 (90%)	4 (6.5%)	0 (0%)	2 (3.5%)	62 (100%)
SmartPhone	39 (63%)	3 (5%)	2 (3%)	18 (29%)	62 (100%)
iPod	40 (66%)	9 (15%)	4 (6%)	8 (13%)	61 (100%)
iPad	11 (18%)	11 (18%)	3 (5%)	33 (53%)	62 (100%)
Tablet	0 (0%)	0 (0%)	1 (2%)	59 (95%)	62 (100%)
Kindle	0 (0%)	0 (0%)	1 (2%)	57 (92%)	62 (100%)
Nook	0 (0%)	0 (0%)	1 (2%)	61 (98%)	62 (100%)
Students of Color					
Computer	24 (43%)	16 (29%)	6 (10%)	10 (18%)	56 (100%)
Laptop	29 (53%)	9 (16%)	3 (5.5%)	14 (25.5%)	55 (100%)
Internet	48 (86%)	6 (10%)	1 (2%)	1 (25)	56 (100%)
SmartPhone	39 (72%)	2 (4%)	1 (2%)	12 (22%)	54 (100%)
iPod	31 (55%)	6 (11%)	7 (12.5%)	12 (21.5%)	56 (100%)
iPad	9 (16%)	8 (15%)	6 (11%)	32 (58%)	55 (100%)
Tablet	4 (7%)	6 (11%)	3 (5%)	43 (77%)	56 (100%)
Kindle	0 (0%)	3 (5.5%)	3 (5%)	50 (89%)	56 (100%)
Nook	0 (0%)	1 (2%)	1 (2%)	54 (96%)	56 (100%)

*Not technically statistically significant but hovers close to the $p < 0.05$ for Chi-square Statistical Analysis of Strength of Association

Frequencies of Use of Electronic Devices in Student Population of Case Studies (Continued)

All Students	**Daily** n(%)	**Weekly** n(%)	**Monthly** n(%)	**Never** n(%)	**Total N = 118**
English as Primary Language					
Computer	43 (53%)	17 (21%)	9 (11%)	12 (15%)	81 (100%)
Laptop	45 (55.5%)	15 (18.5%)	4 (5%)	17 (21%)	81 (100%)
Internet	76 (93%)	4 (5%)	0 (0%)	2 (2%)	82 (100%)
SmartPhone	52 (63%)	5 (6%)	2 (2%)	23 (28%)	82 (100%)
iPod	51 (63%)	11 (13%)	7 (9%)	12 (15%)	81 (100%)
iPad	15 (18.5%)	15 (18.5%)	6 (7%)	46 (56%)	82 (100%)
Tablet	1 (1%)	3 (4%)	1 (1%)	77 (94%)	82 (100%)
Kindle	3 (4%)	3 (4%)	0 (0%)	76 (92%)	82 (100%)
Nook	0 (0%)	1 (1%)	2 (2%)	79 (97%)	82 (100%)
English as Secondary Language					
Computer	13 (38.2%)	11 (32.4%)	3 (8.8%)	7 (20.6%)	34 (100%)
Laptop	18 (52.9%)	8 (23.5%)	1 (2.9%)	7 (20.6%)	34 (100%)
* Internet	26 (75.5%)	6 (17.6%)	1 (2.9%)	1 (2.9%)	34 (100%)
SmartPhone	25 (75.8%)	0 (0%)	1 (3%)	7 (21.2%)	33 (100%)
iPod	18 (52.9%)	4 (11.8%)	4 (11.8%)	8 (23.5%)	34 (100%)
iPad	5 (15.2%)	7 (21.2%)	3 (9.1%)	18 (54.5%)	33 (100%)
Tablet	3 (8.8%)	5 (14.7%)	3 (8.8%)	23 (67.6%)	34 (100%)
Kindle	0 (0%)	4 (11.8%)	1 (2.9%)	29 (85.3%)	34 (100%)
Nook	0 (0%)	0 (0%)	0 (0%)	0 (0%)	34 (100%)

*Not technically statistically significant but hovers close to the $p < 0.05$ for Chi-square Statistical Analysis of Strength of Association

APPENDIX L

STUDENT PERCEPTIONS OF OWN TECHNOLOGY SKILLS

The contingency table below provides a comparison of how key demographic subgroups reported their perceptions of their own technology skills in comparison to the technology skills of their peers. Students reported quite similar perceptions of their own technology skills across diverse demographics with no statistically significant differences in reporting for any group.

Contingency table of student perceptions of technology skills by demographic subgroup.

Demographic	Student Reports Strong Technology Skills [n (%)]	Student Reports Technology Skills Are Stronger Than Peers [n(%)]	Total N=118
Gender			
Male	56 (87.5%)	43 (67%)	64 (100%)
Female	47 (90%)	31 (60%)	52 (100%)
Race/Ethnicity			
White Students	54 (88.5%)	40 (65.5%)	61 (100%)
Students of Color	49 (87.5%)	34 (61%)	56 (100%)
Primary Language			
English	73 (90%)	53 (65%)	81 (100%)
Non-Native English Speaker	29 (85%)	19 (56%)	34 (100%)

APPENDIX M

STUDENT REPORTED ENGAGEMENT INDICATORS by CASE STUDY

The table below provides a summary of the rates at which each case study reported positively for all indicators of student engagement included in the student survey instrument.

All Indicators of Student Engagement by Digital Text & Print Text Contexts

Engagement Indicator	**Greg: Print**	**Greg: Digital**	**Brian: Print**	**Brian: Digital**
	n=27	**n=33**	**n=30**	**n=26**
Students enjoy social studies classes.	17 (63%)	20 (60%)	27 (90%)	20 (77%)
Students enjoy World History class.	21 (78%)	24 (73%)	29 (97%)	21 (80.5%)
Student enjoyed learning human rights content.	19 (70%)	17 (51.5%)	17 (57%)	21 (81%)
Students enjoyed using technology in class.	25 (92%)	24 (73%)*	27 (90%)	18 (69%)*
Students learned information that is relevant to them personally.	19 (70%)	26 (79%)	26 (87%)	26 (97%)
Students learned skills they can use outside this class.	19 (70%)	26 (79%)	21 (70%)	21 (81%)
Students felt challenged by the technology used.	6 (22%)	8 (24%)	2 (6%)	9 (36%)*
Students felt challenged by class work.	10 (37%)	8 (24%)	7 (23%)	10 (37%)
Students felt challenged by homework	6 (22%)	9 (27%)	5 (17%)	4 (15%)
Students felt challenged by human rights content.	12 (44%)	15 (45%)	16 (53%)	11 (42%)

*$p < 0.05$ for Chi-square Statistical Analysis of Strength of Association

All Indicators of Student Engagement by Digital Text & Print Text Contexts (Continued)

Engagement Indicator	**Greg: Print**	**Greg: Digital**	**Brian: Print**	**Brian: Digital**
	n=27	**n=33**	**n=30**	**n=26**
Students will use the information learned outside of class.	19 (70%)	28 (85%)	20 (66%)	23 (88%)
Students will discuss human rights issues outside of class.	12 (44%)	20 (60%)	15 (50%)	14 (52%)
Students will learn more about human rights issues on their own.	9 (33%)	16 (48%)	10 (33%)	8 (30%)
Students will participate in an activity focused on human rights issues outside of class.	2 (7%)	8 (24%)	7 (23%)	4 (15%)
Students will join a club focused on human rights.	4 (15%)	5 (15%)	5 (17%)	5 (18.5%)
Students will volunteer for a human rights organization.	5 (18.5%)	9 (27%)	5 (17%)	5 (18.5%)

*$p < 0.05$ for Chi-square Statistical Analysis of Strength of Association

APPENDIX N:

DOMINANT THEMES to EMERGE FROM ANALYSIS of CLASSROOM OBSERVATION DATA with DISCUSSION of ILLUSTRATIVE EXAMPLES of CODED DATA

Theme	Examples of Observed Behavior Relevant to Theme
Engaged with Academic Task	• Student asks a content question • Student addresses a content question posed by a peer • Student(s) present(s) analysis of content to class • Student listening to speaker with appropriate eye contact/body language • Student reads text to himself/herself • Student reads section of the text aloud to a small group of peers • Student intermittently writes notes while reading text • Student writes notes in response to something stated by teacher or peer • Student highlights text in response to teacher's explanation of content • Student reviews text for key information • Student(s) researches content-related information on iPad • Student types/writes on learning product • Student reads directions posted at front of the classroom • Students from different groups share/discuss one another's learning products
Engaged with Reading	• Student appears engrossed in task of reading for 15-minute interval or longer • Student intermittently writes notes while reading text • Student highlights text while reading • Student manipulates embedded photos in digital text
Effort or Investment	• Student demonstrates active listening with body language & expresses nonverbal enthusiasm (i.e. smile; hand raised) • Student(s) express verbal enthusiasm for content-related activity (cheer; laughter; disappointment) • Student appears deeply engrossed with academic task for 15-minute interval or longer • Student(s) demonstrate enthusiasm/emotion during discussion of content • Student celebrates performance on academic task (i.e. "I just killed that [presentation]!"; high-five to peers) • Student remains after class to discuss content with teacher/peer(s)
Persistence or Concentration	• Student redirects peer group to academic task • Student appears engrossed in task of reading for 15-minute interval or longer • Student remains engaged in academic work despite working with an off-task peer group

Theme (Continued)	**Examples of Observed Behavior Relevant to Theme** (Continued)
Collaborative Learning	• Student(s) ask(s) another student question on content • Student offers personal analysis or summary of content to peer(s) • Student organizes peer group procedures • Student(s) ask(s) another student how to perform a technical task in digital text • Students discuss/debate differences of opinion on content with one another • Student(s) demonstrate a technical function of the digital text • Student(s) watch a peer demonstrate a technical function of the digital text • Student(s) peer edit learning products
Classroom Management Challenges	• Student(s) play(s) with unrelated application(s) on iPad • Student reads unrelated Website on iPad
Disengaged	• Student(s) play(s) with unrelated application(s) on iPad • Student(s) not engaged with any academic task for 15-minute interval • Student puts head down on desk • Student sleeps • Student walks around classroom at inappropriate time • Student(s) throw paper airplanes
Off-Task	• Students discuss unrelated topics • Student(s) play(s) with unrelated application(s) on iPad • Student uses cell phone • Student plays with another student's hair
Differences in Digital v. Print	• Pace of reading is faster in print case (more content addressed) • Students create digital Keynote learning product • Students create poster learning product • Less time spent on discussion of human rights video clip in print case • Teacher gives print class a "break" from academic tasks in print case only
Hybrid Model	• Teacher supports digital text with printed handout(s) with procedural directions or note-taking template

Theme	Examples of Observed Behavior Relevant to Theme
Academic Challenges of Technology	• Student(s) raise technical questions on accessing or using digital text • Student(s) requests keyboard to use in conjunction with iPad platform
Academic Benefits of Technology	• Students create more sophisticated learning product using digital text & iPad platform than print case • Teacher demonstrates how to use embedded dictionary function • Student(s) use(s) embedded learning support tools of digital text as they read or discuss content or create learning products • Student(s) access Web resources for support with content using digital text & iPad • Student(s) request to use digital text during class presentation
Technology Skills	• Students follow technology protocols (i.e. class puts iPads away on charge cart in 80 seconds) • Students manipulate digital text adeptly • Students demonstrate technology etiquette (i.e. close iPads when a speaker is addressing class) • Students exhibit personal preferences for using the digital text (Landscape v. Portrait mode) • Students do not need technical support when offered
Time to Implement Technology	• Teacher discusses classroom protocol for appropriate iPad use • Student(s) raise technical questions on accessing or using digital text • Teacher resolves a technical issue with digital text for student(s)

Discussion of Definitions & Examples of Emergent Themes from Classroom Observation Data

The first theme summarized in the table above, "Engaged with Academic Task," captures the broadest category of data that provided strong observational evidence that students were actively participating in their learning (Marks, 2000). Behaviors such as reading an excerpt of the digital or print text aloud to a small group of students; highlighting or annotating a section of text in response to an explanation of content by the teacher or a peer; or listening to a speaker with appropriate eye contact, body language and responsive facial expressions are some common examples of coded behavioral data that addressed this theme.

Subsequent themes that addressed observed behavioral engagement focused on a narrower range of behaviors and required more extensive evidence of engagement to be included. For example, both the theme of "Effort or Investment" and the theme of "Persistence or Concentration" denote behaviors that were even stronger indications of student participation in their own learning. Examples of coded behavior that were analyzed to demonstrate the theme of "Effort or Investment" included the enthusiastic expression of body language in addition to contextually appropriate body language (i.e. verbally expressed cheers or disappointment; hand-raising in response to teacher or peer prompting) as well as behavior such as remaining after a class had ended to continue to discuss content with the teacher and/or peers. For instance, a student in Teacher A's print case study, who had just finished an oral presentation of her human rights policy recommendations to the class, returned to her group and enthusiastically exclaimed, "I

just killed that!" while smiling and high-fiving her group members. This behavior was an indication that the student was invested in her academic performance and provided robust evidence of her behavioral engagement during that particular portion of the unit. Similarly, the theme of "Persistence or Concentration" emerged from coded data that indicated students were more engaged in an academic task than was typical of their peers at the same moment in time. For example, instances when students were either observed redirecting off-task peers to the academic work of a group or working on an assigned academic task without distraction despite an off-task peer group were assessed as demonstrations of the kind of "persistence" or "concentration" that were strong indicators of behavioral engagement.

Given this inquiry's focus on the differences in the learning experience provided by a print text and a digital text, coded behavior that provided particular evidence of students' experiences with the text constitutes an important theme of "Engaged with Reading." As with the themes of "Effort or Investment" and "Persistence or Concentration," behavior that was characterized as "Engaged with Reading" exhibited a greater indication of a student's participation in their learning than the broader theme of "Engaged with the Academic Task." For example, rather than students reading aloud from the text to one another or reading the text to themselves, students exhibited active or focused reading that was qualitatively different than the more consistent patterns of reading exhibited by their peers. Behavior that was coded as "engrossed in the task of reading for the entire fifteen-minute interval of observation" or "active reading" (i.e. intermittently writing notes, highlighting or annotating the text while reading) are the

most common demonstrations of coded data that comprised the theme of "Engaged with the Reading."

The theme of "Collaborative Learning" emerged from coded data that demonstrated students working closely with their peers to build their academic skills or content knowledge. Some characteristic examples of behaviors that were analyzed as exhibiting "Collaborative Learning" are: 1) a student posing an analytical question about the human rights content to their peer(s); 2) students debating differences in their opinions on content with one another without being prompted to do so by their teacher; 3) a student demonstrating how to perform a complex academic skill for their peer(s) such as identifying the main idea in a text; or 4) a student demonstrating how to perform a complex technical skill such as toggling between multiple software programs on the iPad.

These examples of "Collaborative Learning" have implications for the level of student engagement observed in the case studies because they seem to indicate the presence of two important engagement constructs that Fredricks, Blumenfeld & Paris (2004) argue consistently increase student engagement: authenticity of learning task and student autonomy. As noted previously in the review of the literature, in the high school social studies classroom, authentic learning tasks give students the opportunity to practice democratic participation, as when students were observed debating complex issues. Similarly, instances where students are either observed participating in their own learning by requesting that their peers demonstrate technical or academic skills for them or by deliberating with a peer group, without being prompted to do so, provide strong evidence

that the student autonomy that Fredricks, Blumenfeld & Paris (2004) believe to be a hallmark of engagement is at work in the case study.

In contrast, the closely related themes of "Classroom Management Challenges" and "Disengagement" both document behaviors that indicated students were probably not participating in learning either social studies content or relevant academic skills. However, the theme of "Classroom Management Challenges" is only relevant to the two digital case studies because it reflects instances where students appeared distracted from learning by the presence of the digital text and the iPad technology. Additionally, this theme includes behavior that is often difficult for the teacher to be aware of and address due to the nature of digital technology.

One commonly observed behavior that fits within the theme of "Classroom Management Challenges" was the use of unrelated applications on the iPad, such as the camera function, at times when students were supposed to be engaged with reading the digital text or creating a learning product. Another frequent example of "Classroom Management Challenges" posed by the specific capabilities of a digital text was students engaged in reading websites that were unrelated to the human rights content or their World History class such as ESPN.com. This behavior is an example of a challenge that is unique to a digital learning environment because students who were reading unrelated websites often appeared to be reading the digital text. The nature of the unrelated content could only be observed at very close physical proximity.

The theme of "Disengagement" is related to "Classroom Management Challenges" but designates behavior where students appeared to be off-task from

academic learning in ways that were not technology-specific. For example, coded behavior that was judged to fall within the framework of "Disengagement" indicates instances where students were discussing topics unrelated to the class for the entire fifteen-minute interval of observation. Other common examples of coded data that qualified as "Disengagement" are: students observed sleeping; students observed with their heads down on their desks for an extended period of time; or students observed walking around the classroom at an inappropriate time without a specific purpose.

The final six themes to emerge from the cross-case analysis of classroom observation data each capture a specific difference between the experiences of the print case studies and those of the digital case studies. The broadest theme capturing these data is "Differences in Digital v. Print" which denotes instances where something significant changed in the classroom environment between the observation of the same teacher's digital and print case studies. For example, a print and a digital case study observed on the same lesson day often addressed different volumes of the human rights content because students in the print case studies were observed to read more quickly and therefore, addressed more content than their digital counterparts. Similarly, because the learning products created in the digital and print case studies were both qualitatively different and often required different academic skills, students in the print case studies often created learning products in less time than students in the same teacher's digital case study.

The theme of "Time to Implement Technology" is related to these observed differences between digital and print contexts. However, this theme more specifically

captures coded data that emphasized the additional time devoted to the implementation of technology. For example, instances where the teacher spent significant class time discussing protocols for the appropriate use of the iPad are included in the theme of "Time to Implement Technology" as are instances where class time was spent resolving technical issues or teaching students new technology skills required to use the digital text. Inversely, the theme of "Hybrid Model" designates observations of the teachers using printed handouts to facilitate their digital case study keeping pace with their print case study. For example, a teacher handing out printed note-taking templates for their digital case study to use rather than relying on the multiple note-taking functions provided by the digital text indicates that the teacher was relying on a "Hybrid Model" rather than a purely digital one.

Like the broader theme of "Differences in Digital v. Print," both the theme of "Academic Challenges of Technology" and the theme of "Academic Benefits of Technology" capture instances where a clear difference in the learning experience between print and digital case studies with the same teacher was observed. However, these two categories provide an additional analytical layer by designating coded behaviors that seemed to strongly indicate that those differences were creating either a negative or positive learning experience for students. For example, the theme of "Academic Challenges of Technology" summarizes coded data that indicated students were struggling with the technical skills required to use the digital text by asking technology-specific questions. Inversely, the theme of "Academic Benefits of Technology" summarizes coded data that indicated students were experiencing additional

academic rigor or support by using the digital text. For example, instances where the students were observed choosing to access the embedded learning support tools of the digital text such as the dictionary or linked multimedia were categorized within the theme of "Academic Benefits of Technology" as were instances when the process of creating student learning products as well as the finished product were more academically sophisticated in a digital case study than its print counterpart.

Finally, the theme of "Technology Skills" is related to the theme of "Academic Benefits of Technology" in that it also refers to instances where students were observed gaining additional skills from their use of the digital text. However, this theme more specifically describes observations of students using new technology skills or gaining technical fluency in either digital case study rather than broader academic benefits. For example, coded data that captured students exhibiting technology etiquette that had been explicitly addressed by their teacher such as closing their iPads to give their full attention to a speaker is included in the theme of "Technology Skills", as are instances when students were observed declining technical support offered by their teacher because they had developed greater technical fluency over the course of a few days of working with the digital text.

APPENDIX O:

PREVALENCE of EMERGENT THEMES from CLASSROOM OBSERVATION DATA by CASE STUDY

Theme	Greg Digital Case	Greg Print Case	Brian Digital Case	Brian Print Case	Digital Case Frequency	Print Case Frequency
Engaged with Academic Task	65	58	75	57	55%	45%
Engaged with Reading	27	26	18	17	51%	49%
Effort or Investment	21	8	21	13	67%	33%
Persistence or Concentration	2	9	3	0	36%	64%
Collaborative Learning	23	15	13	3	67%	33%
Disengagement	3	6	0	3	33%	67%
Differences in Digital v. Print	2	8	1	5	19%	81%
Student Questions	69	38	51	56	56%	44%
Student Comments	14	0	82	63	60%	40%