Exploring Preservice Teacher Education That Connects Technology Use and Historical
Thinking in the Social Studies Classroom: A Case Study

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DEDICATION

This is dedicated to my family. I hope this journey opens the doors for us to follow our dreams.

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I would like to thank my friends, family, and supporters who made this possible. My wife Stephanie who supported me every step of the way, providing me the motivation and love needed to finish and my daughter Eloise who knew just when to smile and laugh. To my dissertation committee, Drs. Norton, Hathaway, and Pellegrino who aided me with their guiding words, helpful critique, and infinite patience.

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ABSTRACT

EXPLORING PRESERVICE TEACHER EDUCATION THAT CONNECTS
TECHNOLOGY USE AND HISTORICAL THINKING IN THE SOCIAL STUDIES
CLASSROOM: A CASE STUDY

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Teachers who are beginning their career upon completion of their preservice teacher
education program are expected to be able to successfully integrate technology into the
classroom in ways that support the thinking skills of students while also being an expert
in content knowledge and master of classroom pedagogy. This study used a new course
designed to address the challenges of preservice teacher education where students learned
about technology integration situated in the context of their content specialty.   This study
examined the impact that course completion had on participants' attitudes and beliefs and
their ability to design technology-rich lessons through the use of surveys and interviews
with participants as well as analysis of participants' lesson designs. Data were analyzed
for emergent themes in exploratory case studies and participants' experiences were
examined using a cross-case analysis. The results of the study indicated that changes

could occur within the preservice teacher education model to improve future teachers'

lesson design abilities and their attitudes and beliefs about technology in schools.

CHAPTER ONE

Introduction

With the advent and integration of modern technology, there has been a dramatic change in people's lives. Technology informs individuals as they communicate, collaborate, and engage with everyday tasks. Today's students are frequently interacting with media and technology and are bombarded by multiple forms of media that dominate a large percentage of their waking day (Roberts & Foehr, 2008). The interactions between students and technology occur in every facet of their life, including the academic setting. As tools become more advanced, "the technology of everyday life has moved well beyond what educators are taught to and regularly use to support student learning" (U. S. Department of Education, Office of Educational Technology [OET], 2010, p. 39) which increases the expectations and demands of what technology students use in the classroom. Technology has become so important and ingrained in the daily actions of students that preservice teacher education programs are challenged to develop ways to teach necessary computing skills to teachers while standards of technology learning and use are implemented in the traditional classroom (Kay, 2006; Roblyer, 2000).

Although the established standards form expectations for the learning and use of technology in the classroom and attempt to delineate what students should be learning about technology, when they should be using it, how they should use it, and for what

purpose, the integration of technology in conjunction with the core subject standards becomes more difficult as teachers are required to understand the use of these technology tools and how they support the learning of content in context (Betrus, 2012; DeGennaro, 2010). OET (2010) outlined a National Education Technology Plan and argued for technology in the classroom that enables "21st-century competencies and such expertise as critical thinking, complex problem solving, collaboration, and multimedia communication should be woven into all content areas" (p. xi). The technology plan called for teachers to understand how to integrate technology so that it directly supports the complex thinking skills needed to interact with various content areas to engage students.

Context of the Problem

The technology plan is not the only source expecting teachers to integrate technology as "[p]rincipals want new teachers to know how to use technology to create authentic learning experiences for students and how to leverage technology to differentiate instruction before they apply for a position at their school" (Project Tomorrow, 2013, p. 5). In addition to expertise in integrating technology in the classroom, new teachers are expected to have a mastery of content and an ability to teach that content in an engaging, practical manner that enhances student learning while covering that content for high-stakes tests (Lo, Chang, Tu, & Yeh, 2009; Stern & Stern, 2011).

Despite the rapid development of technology and its instructional applications, teacher education preservice teacher education programs remain rooted in an approach

that separates the use of technology from its application to curriculum content in the classroom (Betrus, 2012). This approach compounds a problem where preservice teacher education programs fail to recognize that the current generation of preservice teacher learners have grown up digital in their personal lives but experienced many traditional forms of education in their own learning and reinforces the idea that technology is independent from content and learning (Hammond & Manfra, 2009; Lei, 2009; Wright & Wilson, 2009). In light of the experiences and developing needs of our preservice teacher learners, preservice teacher education programs have a responsibility "to help [preservice teachers] make the transition from digital-native students to digital-native teachers who can use technology in meaningful ways in classrooms" (Lei, 2009). Understanding meaningful application of technology is important for preservice teacher learners that have no practical experience integrating technology into the learning environment.

The use of technology that supports complex thinking skills to engage students in solving problems in the content area has been conceptualized by Koehler and Mishra (2009) as the Technology, Pedagogy, and Content Knowledge (TPACK) Model. According to Koehler and Mishra:

> [TPACK is] the basis of effective teaching with technology, requiring an understanding of the representation of concepts using technologies; pedagogical techniques that use technologies in constructive ways to teach content; knowledge of what makes concepts difficult or easy to learn and how technology can help redress some of the problems that students face; knowledge of students' prior knowledge and theories of epistemology; and knowledge of how technologies can

be used to build on existing knowledge to develop new epistemologies or strengthen old ones. (p. 66)

Koehler and Mishra explained that this approach allows the teacher to, "flexibly navigate the spaces defined by the three elements of content, pedagogy, and technology and the complex interactions among these elements in specific contexts" (p. 66). They concluded that the TPACK model could allow preservice teacher education programs to, "move beyond oversimplified approaches that treat technology as an 'add-on' [and] instead to focus...upon the connections among technology, content, and pedagogy" (p. 67) which could enable teachers to design lessons that thoughtfully integrate technology to support complex thinking skills in the content.

Traditional preservice teacher education structure. "Preservice teachers are exposed to a plethora of skills based training activities. However, insufficient effort is made to align technology with discipline-specific pedagogy" (Brush & Saye, 2009, p. 46). In an examination of the historical evolution of preservice teacher technology education over a ten year period, Betrus (2012) found in a tenth anniversary update to a 2002 study of 35 preservice teacher technology education courses that even though the types of technology taught in preservice teacher technology education courses continue to evolve to meet the new technologies available in the classroom, there remained no change in the purpose of the courses. The preservice teacher technology education courses continued to teach preservice teacher learners how to use technology rather than how to connect technology to their profession, continuing a trend first observed a decade earlier.

Keeler (2008) argued that part of the problem stems from "A concern...that instructors teaching...methods courses are rarely versed in instructional technology. Yet, paradoxically, preparing teachers to integrate technologies throughout their curricula requires providing opportunities to experience content specific instructional strategies that use technology" (p. 23). In other words, the current instructors are not adequately prepared to exemplify successful and appropriate technology integration. The current structure of introductory technology courses for preservice teacher learners ignores the fact that many preservice teacher learners already feel comfortable with computers but are not prepared to integrate technology into a curriculum or classroom (Funkhouser & Mouza, 2013).

Franklin and Molebash (2007) argued that, "knowing how to use technology is a necessary foundation to the development of electronic pedagogical content knowledge and skill, but we contend that pedagogical use of technology is different from other uses of computers" (p. 168). Doppen (2004) supported this argument by explaining that "a significant difference exists between knowing the tools - knowing how to operate a computer - and using the tools - knowing how to use computers meaningfully in an educational setting" (p. 250). Yet, preservice teacher education programs do "not address affordances of the technology, instead [focusing] on learning how the tool works" (p. 269) which ignores the meaningful application of technology into lesson design. This approach to technology instruction for preservice teacher learners communicates a message to prospective teachers that technology is "a skills-based discipline that is

discretely conceptualized outside of the context of learning" (DeGennaro, 2010, p. 339)

rather than a tool that needs to be thoughtfully integrated into instruction.

The problem of perceiving technology as a skills-based discipline is compounded

when traditional preservice teacher education programs fail to introduce information

technologies and their affordances in lesson design, resulting in teachers who are unable

to use technologies to support their own instruction (Bates, 2008). Friedman, Bolick,

Berson, and Porfeli (2009) argued that:

> Teaching technology skills holds unique importance in social studies
>
> education. To best prepare young people to become citizens of today's
>
> global society, teachers must help students develop technology literacy
>
> skills. Students must have familiarity with technology, because many of
>
> the foundations upon which the American democracy rests are
>
> increasingly interwoven with technology. Social studies teacher
>
> educators, thus, are called upon to prepare teachers who will use
>
> technology to foster citizenship skills. (p. 477)

The authors indicated that, for social studies educators, there is an increased

responsibility to successfully integrate technology due to the increasing presence of

technology in the democratic process.

In order to address the need that social studies educators integrate technology,

"[p]reservice social studies teachers need to see technology effectively modeled and have

meaningful opportunities to use technology if they are going to integrate technology into

their future social studies teaching" (Adcock & Bolick, 2011, p. 224). Seeing technology

integration effectively modeled requires preservice teacher education programs to offer

teachers the opportunity to examine the use of technology in situated in the context of

practitioners, affording future educators the opportunity to explore the use of instructional

technology as it relates to integration in the social studies classroom (Brush & Saye,

2009).

In a qualitative study of preservice teacher learners, Funkhouser and Mouza

(2013) found that providing preservice teacher learners the opportunity to reflect on

activities and challenges experienced in integrating technology was central to the

development of positive attitudes and beliefs about the role that technology played in the

classroom . The findings of the study indicate that attitudes and beliefs then play a role

shaping how preservice teacher learners determine what technologies are integrated in the

classroom, how technology is implemented to support the curriculum, and whether

technology is even used in lesson design at all (Chien, Chang, Yeh, & Chang, 2012;

Doppen, 2004; Funkhouser & Mouza, 2013; Lei, 2009).

Technology and the preservice teacher. Many of today's preservice teacher

learners are, as Prensky (2001) coined, digital natives who view "technology as an

indispensable component of their daily lives, and they strongly believed in the potential

of technology to help teaching and learning" (Lei, 2009, p. 92). As a result of their

exposure to technology, digital native preservice teacher learners understand how to use

basic technology tools. Therefore, while instruction in basic technology may have been

necessary for preservice teacher learners from a generation that grew up without

technology, the era of the digital-native preservice teacher learner is upon us. It is

important to recognize that, "as digital natives, most preservice teachers have sufficient expertise with generic technologies" (p. 92), but struggle integrating tools to support content-specific thinking. While they have an understanding of how to use tools to support their personal needs, they do not necessarily understand how to integrate tools into the learning environment.

Guo, Dobson, and Petrina (2008) noted that, "many young people acquire...a basic skill set allowing them to negotiate media quickly and easily [but that] does not...mean that these young people have any sophisticated critical understanding of how those media work to convey information, to influence opinion, and so on" (p. 237). For preservice teacher learners, this means that simply being a digital native does not necessarily result in a deep, complex understanding of technology, its affordances, and its application to curriculum. To counter this, some institutions have started to focus on integrating technology through content-oriented strategies as a way to help generate an understanding of technology tools in relation to the content (Gronseth et al., 2010). Furthermore, Gronseth et al. argued that content-oriented strategies have "the potential to revolutionize student work, in contrast to a more limited preparation focus on teaching for literacy of specific technology tools" (p. 34).

Funkhouser and Mouza (2013) found that, "Just as preservice teachers come to their training programs with deeply-held beliefs about teaching, they also come with beliefs, established as K-12 students, about the role of educational technology" (p. 272). Their beliefs were established through their experiences in their personal lives as well as their academic lives in the K-12 classroom. Lei (2009) indicated that digital natives who

are in preservice teacher education programs have used technology mainly within their personal experiences and have limited if any experience integrating technology to help students learn. The digital natives' personal characteristics and interactions with digital tools could be acknowledged in the development of preservice teacher education programs.

Such limited use of technology may foster a negative attitude about the use of technology in the classroom, especially in preservice teacher learners who possess a one-dimensional, traditional approach to classroom instruction (Tondeur, Hermans, van Braak, & Valcke, 2008). Preservice teacher learners' negative attitudes and beliefs about the effectiveness of instructional technology and its use in the classroom may well stem from their experience as students in the classrooms of teachers who were digital immigrants. The preservice teacher learners' K-12 teachers likely modeled the use of instructional technology as a skill or tool to be learned for a specific use rather than as a pedagogical concept to be integrated to support student learning (Funkhouser & Mouza, 2013). To influence these preservice teacher learners' view of instructional technology likely requires an approach where colleges of education integrate technological tools throughout their curricula. The curricula includes content methods courses where instructors could use established instructional strategies such as class-wide discussion, lesson design, and unit planning that connect 21st century skills, tools, and content (Keeler, 2008).

Best practices in social studies education. Social studies classrooms continue to be influenced by those who view mastery of the social studies as successful

memorization of names, dates, and places. (Misco & Shiveley, 2010; Schools/Conflict Resolution Management, 2007). As a result, social studies often suffers from a mandatory list of facts to be memorized by students rather than encouraging the use of thinking skills and processes to engage with and learn content. These competing interests are seen not only in history but across the social studies disciplines, impacting teachers of government, economics, geography and the behavioral sciences (Porter-Magee, 2011; Stern & Stern, 2011).

With little consensus on what and how to teach social studies combined with the inability of preservice teacher learners to predict the content area they will teach upon graduation means that preservice social studies teacher learners could be taught to use and teach specific thinking skills that are applicable to a variety of social studies content areas, and that can then be used by students beyond the specific content (Waring & Robinson, 2010; Westhoff & Polman, 2008; Wineburg, 2001). A focus on historical thinking, a set of thinking components that encompass skills used by historians to interpret and connect with the past, may provide prospective social studies educators with clear, definable applications to the broad spectrum of the social studies curriculum through critical thinking, judgment, and engagement with historical material and content (Salinas, Bellows, & Liaw, 2011; Viator, 2012; Waring & Robinson, 2010; Wineburg, 2001).

Historical thinking encompasses skills used to engage with historical content including chronology, comprehension, analysis and interpretation, research, and issue-analysis and decision-making (Wineburg, 2001; Westhoff & Polman, 2008). These five

equally important components transcend specific curricula and instead offer guidance in how to engage with historical materials, participation in historical inquiry, and evaluation and judgment of interpretations and perspectives (Drake, 2002; Fallace & Neem, 2005; Westhoff & Polman, 2008; Wineburg, 2001). In practice, historical thinking becomes "the active doing of history" (Russell & Pellegrino, 2008, p. 5) where students construct their own interpretation of the past in ways that contextualize time and place in a greater context than specific course curriculum (Lo et al., 2009). Whether students are engaged in developing a solution to peace after World War I by analyzing issues and researching long-term effects, interpreting the historical development of their city and comprehending the complex economic forces affecting these developments, or examining the effect of major political documents of modern governments, historical thinking skills provide the pedagogical framework for engaging lessons, regardless of the specific content of the course (Lo, et al., 2009; Marino, 2012; Metzger, 2010; Pellegrino, Lee, & d'Erizans, 2012). By developing a strong pedagogical understanding of historical thinking, preservice social studies teacher learners will be able to meet the needs of the broad social studies curriculum by teaching their students the content through authentic activities that engage them in the activity of thinking like a historian (Bolinger & Warren, 2007; Fallace & Neem, 2005; Russell & Pellegrino, 2008; Westhoff & Polman, 2008).

Doppen (2004) argued for preservice social studies teacher learners to be exposed to tools that offer them the opportunity to "reconcile their beliefs about history pedagogy, history content, and classroom management/discipline issues with technology integration, exploring a variety of ways to integrate technology in a manner that works best for them

and is sustainable in their school setting" (p. 273). In this way, preservice social studies

teacher learners can develop an understanding of technology tools that support the

instruction of historical thinking. With exposure to historical thinking in the preservice

teacher education program as well as technology tools that can support using historical

thinking in lesson design, preservice teacher learners can develop a robust design-making

process that will aid them in selecting tools and using appropriate technologies to support

instruction (Salinas et al., 2011; Westhoff & Polman, 2008). An approach that uses

historical thinking as a framework to engage with social studies content with the

assistance of appropriate technology does not focus on one specific tool or thinking skill

within the historical thinking framework but instead supports a course design where

multiple tools are used by the preservice teacher learners to offer future students the

opportunity to experiment, debate, and gain exposure to a robust array of technology

tools that provide many affordances to support historical thinking in lesson design.

 Technology affordances and tools. Through the appropriate selection of

learning technology by recognizing their various affordances, teachers can use authentic

activities to engage students in critical thinking, reasoning, and collaborative problem

solving (Seau Yoon, Ho, & Hedberg, 2005). The affordances of learning technologies

stem from both their real affordances - the way in which a tool and the user interact with

the environment, and the perceived affordances - the way in which the user believes the

tool is capable of interacting with the environment (Bower, 2008; Day & Lloyd, 2007).

A social studies teacher who recognizes which affordances support their learning goals

and objectives is able to create thoughtful lesson designs that use technology not for the

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sake of learning the tool but for understanding how that tool supports the actions of a historian (Badia, Barbera, Guasch, & Espasa, 2011; Chien et al., 2012). However, integrating and understanding tools is not an automatic process. It is a learned set of skills based on recognizing, evaluating, and applying the affordances of a variety of technologies to support specific pedagogical goals. When preservice teacher learners comprehend and apply skills within the context of their own future curriculum, they are better able to capture the possibilities of technology integration to support teaching and learning (Angeli & Valanides, 2009; Chien et al., 2012; Seau Yoon et al., 2005).

Course design. Brush and Saye (2009) argued that in order to effectively develop and evolve attitudes and beliefs about instructional technology, preservice teacher learners should have experiences where they can practice strategies for technology integration in their content area as well as opportunities to see technology effectively modeled in their content area. It is important to create opportunities where preservice teacher learners can practice technology integration in their content field and develop a connection between lesson design, technology integration, and disciplinary thinking skills (Bell, Maeng, & Binns, 2013; Brush & Saye, 2009; DeGennaro, 2010;). OET (2010) stated that "The best way to prepare teachers for connected learning is to have them experience it" (p. 44).

One way for facilitating experiences where preservice teacher learners developed a connection between lesson design, technology integration, and disciplinary thinking skills was an online course (EDIT 504 – Introduction of Education Technology for Secondary Teachers) designed to provide preservice teacher learners a learning

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opportunity that directly connects technology to learning and teaching. The course

structure provided a means for preservice teacher learners to experience technology

integration in the social studies classroom, evaluate its integration with and support of

historical thinking, and develop their own lesson designs that incorporate technology

within the historical thinking framework. The use of an online infrastructure provided

students the opportunity to engage with the teacher and among preservice teacher

learners, a chance to examine and experience tools and their use within the social studies,

and a chance to try new and unfamiliar technologies. Additionally, the online

infrastructure afforded preservice teacher learners time to engage with new tools, an

asynchronous learning environment that enabled their continued development in teaching

internships, and the direct use of tools in the context of a learning environment (Budd,

Downing, & Dymet, 2013).

Statement of the Problem

Despite the progress 21st century humans have made integrating technology in

the lives of individuals, academics, and professionals, teachers continue to struggle with

effectively integrating modern technology in the classroom in ways that provide an

authentic learning environment that connects content to its practical application (Project

Tomorrow, 2013). As digital natives begin entering and graduating from preservice

social studies teacher education programs, they carry with them preconceived attitudes

and beliefs about technology integration in secondary education social studies classrooms

based on their own academic journeys often void of technology (Lei, 2009).

Unfortunately, many preservice teacher education programs fail to adequately address the preconceived attitudes and beliefs of the digital native preservice teacher learners and fail to adapt to the new landscape of technology integration. Preservice teacher education programs focus on tool comprehension rather than enabling preservice teacher learners to shift their attitudes and beliefs about teaching and learning with technology, understand how to effectively integrate technology into the secondary classroom, and capitalize on how technology integration can support the thinking skills that practitioners use to engage with historical material (Bates, 2008; Betrus, 2012; Brush & Saye, 2009).

One alternative to the traditional preservice technology education course for preservice teacher learners is to design a course that prepares preservice social studies teacher learners to integrate instructional technology by structuring course activities using historical thinking as a framework for lesson and unit design. In this way, preservice social studies teacher learners may come to understand how technology can be incorporated as a part of instruction and develop new, more positive attitudes and beliefs about the possibilities afforded by instructional technology. Such a course was designed at a large mid-Atlantic university - EDIT 504 – Introduction of Education Technology for Secondary Teachers. Therefore, the purpose of this study was to examine preservice social studies teacher learners' attitudes and beliefs about the role of instructional technology and their ability to design technology integrated lessons after completion of a course designed to provide preservice teacher learners with exposure to technology that

was effectively integrated into various social studies content areas to support complex thinking skills needed to solve authentic problems.

Research Questions

The following questions informed the study:

1. How do secondary preservice social studies teachers learners' attitudes and beliefs about their ability to use technology in their teaching change after participation in EDIT 504?

2. How do secondary preservice social studies teachers learners' attitudes and beliefs about their ability to use technology to support social studies learning change after participation in EDIT 504?

3. How did secondary preservice social studies teachers learners' ability to design technology integrated lessons change during EDIT 504?

4. How do secondary preservice social studies teachers learners describe their experience of EDIT 504 and how it impacted their understanding of technology integration in social studies teaching?

Conceptual Framework

In order to understand how preservice technology education connects technology use and historical thinking in the social studies class, the study focused on three important elements: the content, the student, and the course design.

As indicated in the literature, it is important for preservice teacher learners to understand the role technology plays in supporting historical thinking as a framework for lesson design (Angeli & Valamides, 2009; Chien et al., 2012; Waring & Robinson, 2010;

Westhoff & Polman, 2008). However, it is not enough to recognize the role that technology plays. Rather, it is necessary for teachers to understand the affordances that tools provide within the learning environment to successfully integrate their use to support a specific thinking skill within the historical thinking framework (Badia et al., 2011; Bower, 2008; Day & Lloyd, 2007). With this in mind, the content of the course included three elements: Historical Thinking, Technology Use, and Tools and their affordances.

Prior to their teaching experience, preservice teacher learners are exposed to technology personally and academically, and these experiences influence their perception and use of technology in an instructional environment (Baran, Chuang, & Thompson, 2011; Ertmer, 2005; Funkhouser & Mouza, 2013; Russell et al., 2003). A teacher's reflection on how capable they are with technology in addition to their beliefs about how technology can be used in the classroom heavily influences its integration and use to support the curriculum (Betrus, 2012; Hew & Brush, 2007; Russell et al., 2003). Even with the content of the course designed to examine the complex connection of technology use and historical thinking in the social studies classroom, preservice teacher learners who took the course provided a unique interpretation and influence about what is learned and how it is learned. Therefore, it was necessary to examine their use of technology, both instructionally and personally, to understand their attitudes and beliefs about technology, and examine their self-efficacy concerning technology use.

The structure of the course was designed to model for preservice teacher learners examples of how instructional technology could be used in conjunction with historical

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thinking (Abbitt, 2011; Lipscomb & Doppen, 2005). These models were designed to give preservice teacher learners experience of technology integrated social studies instruction that they often lack when entering their profession (Hammond & Mangra, 2009; Lei, 2009; Pamuk, 2012; Wright & Wilson, 2009). Preservice teacher learners' understanding and interpretation of course material was expressed through discussion board posts, providing an introspective of how the student interpreted experiences and examples of technology integration and historical thinking (Adcock & Bolick, 2011; Brush & Saye, 2009; Collison, Elbaum, Haavind, & Tinker, 2000). Finally, preservice teacher learners created products that expressed their beliefs about the use of technology and historical thinking in the social studies classroom, and these artifacts provided a rich tapestry of their changing beliefs about instructional technology (Bell et al., 2012; Brush & Saye, 2009; DeGennaro, 2010). The course provided an intersection between preservice teacher learners, their perception of technology, their understanding of social studies content, their attitudes and beliefs about the use of technology, and their understanding of historical thinking in the social studies classroom. The course was designed to promote an understanding of this complex interaction through its structure, discussion board posts, and products created by the preservice teacher learners (see Figure 1 for a visual explanation of the elements informing the research study structure and design).

Exploring Preservice Teacher Education That Connects Technology Use and Historical Thinking in the Social Studies Classroom: A Case Study

Historical Thinking

Self-Efficacy

Technology Integration

Attitudes & Beliefs

Tools

Content

Student

Course

Discussions

Technology Use

Products

Structure
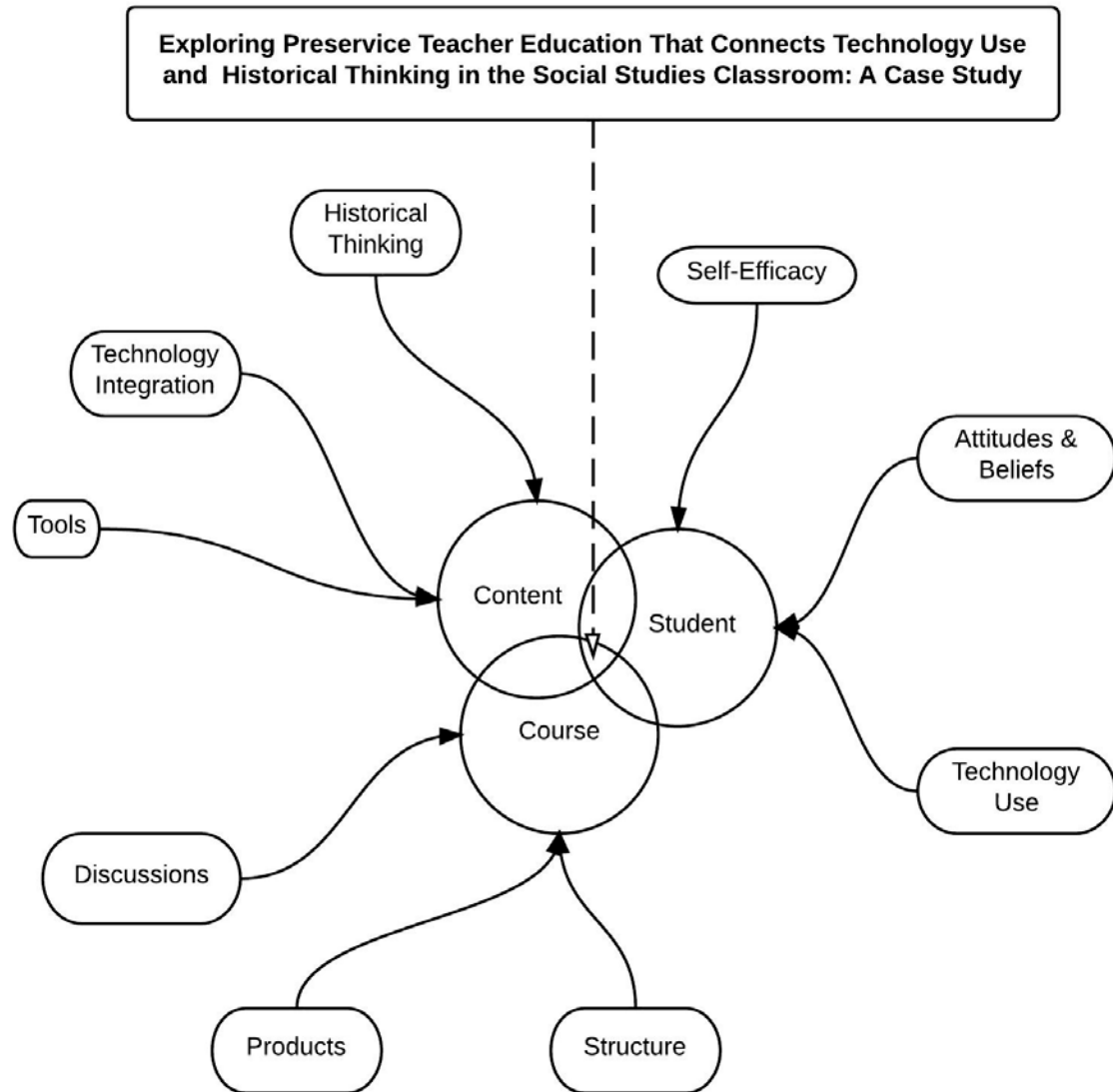
Figure 1. Conceptual framework that informed the exploratory case study.

Scope of the Study

This research study used a case study methodology to explore the impact of EDIT 504 on preservice teacher learners' attitudes and beliefs about technology in schools and in the social studies classroom and their ability to connect technology use and historical thinking in social studies lesson design. Participants completed a fifteen-week elective

course in educational technology at a large, mid-Atlantic University. The final eleven

weeks of the course focused specifically on using technology to support historical

thinking across the social studies curriculum, providing students with experiences and

examples of how technology could be integrated into the classroom.

Data were collected from a number of sources including a pre-post survey that

examined participants' beliefs about technology, understanding of social studies

pedagogy, and knowledge of how technology tools could be integrated into the social

studies classroom environment. In addition to the survey, students were asked to

participate in pre-course and post-course interviews each lasting approximately 60

minutes. Finally, lesson designs from the course itself were examined.

Data were analyzed using multiple strategies, including open-coding of interviews

and descriptive statistics. These various methods were used to triangulate data in order to

present a more accurate case study analysis for each participant. The results of the data

analysis were used to present individual cases of how preservice teacher learners'

attitudes and beliefs about technology in schools and in the social studies classroom and

their ability to connect technology use and historical thinking in social studies lesson

design changed through their participation in EDIT 504. In addition to individual case

study analyses, a cross-case analysis was developed examining the impact EDIT 504 had

on preservice teacher learners attitudes and beliefs and lesson design ability and to

develop an understanding of themes that were concurrent across cases.

Researcher's Perspective and Bias

While teachers are expected to integrate technology into lesson design, preservice teacher education programs have remained rooted to a traditional method of technology instruction for preservice teacher learners. Preservice teacher learners have been taught how to use tools rather than how to effectively analyze affordances and design lessons that incorporate tools. As a former social studies teacher, I was taught using traditional methods of preservice teacher education while learning social studies teaching methods. While that form of instruction served me for years as a classroom practitioner, I believed that I was missing an element of instructional design that effectively used technology as I struggled to effectively integrate technology into my social studies teaching methods, often relying on sage on the stage lectures using digital slides to support my instruction.

My practical experience influenced the direction of my academic design and directed my research into the topic of preservice teacher social studies education, historical thinking, and technology integration. While there were no professional development experiences tied to design, my anecdotal experiences with student achievement in my own classroom helped me to understand that my own preservice teacher education was not sufficient to meet my students' needs. In addition to my practical experience, the research I conducted in the fields of preservice teacher social studies education, historical thinking, and technology integration informed the design of the course that I created. As the course designer, I hoped for positive results in the course design, but as the researcher I studied the participants in such a way that isolated my design experiences from my research. The design of the course occurred exclusively prior to the start of the research study and I did not allow student experiences during the

course to influence any design decisions until the study concluded. Additionally,

research was conducted in a similar, isolated manner, where no interaction with the

course design or students occurred while interacting with artifacts for the research study.

I believed that this was the most effective research design to understand how the course

influenced the participants, but I also believe that it created a layer of separation between

designer and researcher. I believe that this research was valuable for future social studies

teachers and could inform the structure of preservice social studies teacher education

programs, which could ultimately influence the education of K-12 students.

I believe that teachers are designers, thoughtfully crafting lesson and unit

experiences where content is situated in the frame of a practitioner who must use that

content to solve complex problems. Therefore, the classroom teacher works as a sage on

the side, an expert mentor who helps move students from novice consumers of

information to expert creators of knowledge using that information. Using this

perspective, I believe that it is incumbent upon teachers to recognize that they are

designers and that their design decisions influence the classroom experience of students.

Through the use of authentic problems, the teacher as designer can craft a learning

environment where students situate their learning and understand how content can be

applied to creating solutions to the problems faced by a community of practitioners.

Definitions

Affordance. Defined by Gibson (1977), affordance is a term that has been

debated and reinterpreted by numerous psychologists and researchers depending on the

perspective of its use (Hammond, 2010; Maier & Fadel, 2009; Norman, 1999). The basic

definition provided by Gibson can be clearly stated as "what one system provides to another system" (Maier & Fadel, 2009). However, affordances do not stop with what the artifact provides, but also with the perception of affordances on the part of the user (Hammond, 2010). When determining educational affordances, classroom teachers rely on their ability to identify what specific technologies provide the user as well as how those provisions can be used within the classroom to support the instructional objectives of the lesson. Additionally, classroom teachers have the added challenge of recognizing and addressing how those provisions of the tool will be perceived by the students and ensuring that the designed use occurs in support of classroom instruction (Badia et al., 2011; Day & Lloyd, 2007). The complex intersection of design, tool, and user comprised affordances in an educational design setting.

Attitudes and beliefs. In this study, attitudes and beliefs were defined as the way in which preservice teacher learners perceive educational technology as being useful in the classroom to support instruction or not. Through this definition, the study does not examine preservice teacher learners' knowledge of technology or their ability to complete specific tasks within a tool, but rather the way in which they perceive a technology could be used in their curriculum as a learning tool (Ertmer, 2005). Abbitt (2011) noted that "attitudes and beliefs, are among the attributes of individual preservice teacher learners that inform and influence the decisions they will make and behaviors they will exhibit as professional educators" (p. 134). If the preservice teacher learners' attitudes and beliefs inform their decision making as professional educators, then integration of technology in the classroom is not incumbent upon the teacher to learn the tool, but to recognize the

tools affordances and determine if those affordances are capable of supporting student learning.

Efficacy. Efficacy is the personal belief and assurance that difficult tasks and complex ideas can be approached and mastered rather than avoided (Guo, Dobson, & Petrina, 2008). Efficacy in relation to technology integration was essential to successful implementation and related to a teachers' understanding of a technology tool and its connection to pedagogical content knowledge (Franklin & Molebash, 2007).

Historical thinking. Historical thinking in this study was defined as a set of five interconnected thinking skills employed by professionals engaged in the act of understanding history; chronology, comprehension, analysis and interpretation, research, and issue-analysis and decision-making. Defined by Wineburg (2001), historical thinking skills promoted critical thinking, synthesis, decision making, and historical perspective (Pellegrino et al., 2012; Viator, 2012). Historical thinking skills provided skills that can be used to "reflect, synthesize, and construct understanding of history based on evidence" (Salinas et al., 2011).

Preservice teacher learner. The preservice teacher learner is a prospective teacher with no or extremely limited classroom experience. Their current attitudes and beliefs about the role of teachers, students, and academic material to be taught and learned are rooted in their experience as a preservice teacher learner (Funkhouser & Mouza, 2013). Due to the nature of their foundation as K-12 students, their ideas about education are difficult to change, but if the preservice teacher learner assigns "value to a

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specific pedagogical strategy they are more likely to incorporate it into their teaching practice" (p. 272).

Technology integration. Technology integration was defined as "using technology as an essential part of the curriculum, not just as a supplement to existing teaching practices" (Lipscomb & Doppen, 2005, p. 72). Each technology tool provided certain affordances, and integration lies in identifying those affordances and utilizing those affordances seamlessly with historical thinking skills to meet curricular goals in lesson design. True technology integration occurred when technology was used with "meaningful, authentic problem solving where [students] are learning with computers not about them" (Kay, 2006, p. 387).

CHAPTER TWO

Technology In Education

With the advent and introduction of modern technology, there have been dramatic changes in the way people interact with their environment. From the ways in which people communicate, collaborate, and engage with everyday tasks, technology has found a way to inform those interactions with the world. Children ages eight to eighteen are growing up in a world of frequent interaction with media and technology, bombarded by multiple forms of electronic media at the same time and taking up more than seven hours of exposure per day (Roberts & Foehr, 2008). Technology has become so important and ingrained in our interactions that preservice teacher education programs have been developed to teach basic computing skills to teachers and standards of technology learning and use are being implemented for integration into the traditional classroom (Kay, 2006; Roblyer, 2000). This is due in part because school districts and principals want "...new teachers to know how to use technology to create authentic learning experiences for students and how to leverage technology to differentiate instruction before they apply for a position at their school" (Project Tomorrow, 2013, p. 5).

Effectively integrating technology into the classroom is a challenge for educators, who now become responsible for meeting and achieving learning goals through standardized tests as well as technology goals defined through standards such as the ISTE

Standards for Teachers and ISTE Standard for Students (ISTE, n.d.). Not only are

standards putting added stress upon educators, but the "education system and the

institutions that prepare educators often fail to give educators the tools to do their job

well. Our education system holds educators responsible for student achievement but does

not support them with the latest technology" (OET, 2010, p. 39). If the established

system to is not adequately preparing teachers to meet the needs of their students, the

potential to change the established system exists.

In the context of standards-based education and preservice teacher education

programs failing to adequately prepare preservice teacher learners, the situation becomes

worse for social studies educators due to the continued marginalization of social studies

education in the world of high stakes tests that stress the importance of math and English

while maintaining a "myopic concern of content knowledge" in the social studies (Misco

& Shiveley, 2010, p. 125). The literature calls for preservice social studies teacher

learners to learn and practice an instructional methods where they can teach doing

history, engaging with historical content and artifacts in order to construct a concrete

understanding of the past, all while using technology to support the doing of history (Lo

et al., 2009; Pellegrino, Lee & D'Erizans, 2012; Waring & Robinson, 2010; Westhoff &

Polman, 2008).

Despite the rapid development of technology and its instructional applications,

teacher preservice teacher education programs remain rooted in a traditional approach

that separates the use of technology from its application to curriculum content in the

classroom (Betrus, 2012). Preservice teacher education programs are not providing

preservice teacher learners the environment needed to observe the successful integration of technology into classroom practice that provides a cohesive image for the integration of technology into the classroom, (Kovalik, Kuo, & Karpinski, 2013). In a 2008 analysis of research studies that examined current trends in preservice teacher technology education, Polly and Moore found that preservice teacher learners are not being exposed to the way in which instructional technology can support the actual practice of being a classroom teacher. In other words, preservice teacher learners do not know "what technology integration looks like" (p. 26) because preservice teacher education programs are not providing preservice teacher learners the chance to learn how to integrate technology. In a study of 206 preservice teacher learners' perceived value of their technology training, Chen (2010) found that preservice teacher learners should be exposed to the various ways in which technology can support student learning through specific implementation rather than as a generic concept. Additionally, he argued, "preservice teachers can benefit from seeing how technology can be specifically integrated and become immanent in the curriculum, not as an addition to existing lessons (p. 9).

While preservice teacher learners struggle with the integration of technology with classroom practice, they are also faced with the challenge of having grown up digital in their personal lives. However, despite their personal exposure to technology, these preservice teacher learners experienced educational lives that were devoid of technology or an educational context where technology remained independent from content and learning (Hammond & Manfra, 2009; Lei, 2009; Wright & Wilson, 2009). Russell et al.

(2003) found that preservice teacher learners are entering the profession with an understanding of how to use technology but not how to integrate the technology into their own classroom practice. They found that "rather than introducing technology as an available yet peripheral tool, emphasizing technology as an integral tool with diverse uses and inherent potential to enhance teaching and learning beyond what the traditional methods allow" (p. 309) was important for preservice teacher learners to be exposed to prior to the start of their careers.

Preservice Teacher Technology Education

Despite the rapid development of technology and its instructional applications, teacher preservice teacher education programs remain rooted in a traditional approach that separates the use of technology from its application to curriculum content in the classroom (Betrus, 2012). The traditional approach does not enable preservice teacher learners to grasp the connection between technology and content but rather reinforces the idea that technology is a learned skill that occurs outside the context of learning content (Bates, 2008; DeGennaro, 2010). Additionally, it is important to recognize that the current generation of preservice teacher learners have grown up digital in their personal lives but experienced many traditional forms of education, reinforcing the idea that technology remains independent from content and learning (Hammond & Manfra, 2009; Lei, 2009; Wright & Wilson, 2009). As the OET (2010) identified, "They are as comfortable interacting with digital devices and accessing the Internet as their students are. Still, this does not mean they understand how to use the technology of their daily lives to improve their teaching practices. Helping them develop this understanding is the

job of preservice teacher preparation programs" (p. 44). The literature indicates that the current structure of preservice teacher education programs are not helping preservice teacher learners understand how to successfully integrate technology into the classroom.

By redesigning the process through which teacher educators model technology integration in the university classroom, preservice teacher learners will be able to develop a better understanding of curriculum, "...and the role content and pedagogy play with the technology" (Wright & Wilson, p. 151). Keeler (2008) noted that "[a]s colleges of education prepare 21st century teachers, they must accept the responsibility of integrating technological tools throughout their curricula" (p. 29) rather than keeping technology as a tools comprehension course. At the same time, preservice teacher education programs have a responsibility "to help [preservice teachers] make the transition from digital-native students to digital-native teachers who can use technology in meaningful ways in classrooms" (Lei, 2009), embracing their understanding of tools use and applying tools to enhancing classroom instruction.

Traditional preservice instructional technology approach. Preservice teacher education programs exist to help collegiate students develop the aptitudes necessary to be successful as practicing classroom teachers in the K-12 environment. Preservice teacher education programs help to develop skills that include a mastery of content knowledge, practice with classroom pedagogy, and exposure future trends in education. "Preservice teachers are exposed to a plethora of skills based training activities. However, insufficient effort is made to align technology with discipline-specific pedagogy" (Brush & Saye, 2009, p. 46). In an examination of the historical evolution of preservice teacher

technology education over a ten year period, Betrus (2012) found that the type of

technologies taught continued to change to meet the evolving technologies available in

the classroom. In a survey of 35 Preservice teacher education programs, despite the shift

in technologies used in introductory technology classes, there remained no change in the

purpose of the courses, teaching preservice teacher learners to use technology

themselves, rather than in connection to their profession.

Part of this disconnect stems from "A concern...that instructors teaching...methods

courses are rarely versed in instructional technology. Yet, paradoxically, preparing

teachers to integrate technologies throughout their curricula requires providing

opportunities to experience content specific instructional strategies that use technology"

(Keeler, 2008, p. 23). If the instructors of methodology courses are not versed in

instructional technology, they are unable to provide preservice teacher learners with

adequate experience to instructional strategies that integrate technology effectively. The

current structure of introductory technology courses for preservice teacher learners

ignores what many researchers indicated; that preservice teacher learners already feel

comfortable with computers but are not prepared to integrate technology into a

curriculum or classroom (Funkhouser & Mouza, 2013).

Franklin and Molebash (2007) argued that "knowing how to use technology is a

necessary foundation to the development of [the] electronic pedagogical content

knowledge and skill, but we contend that pedagogical use of technology is different from

other uses of computers" (p. 168). Doppen (2004) supported this argument by explaining

that "a significant difference exists between knowing the tools - knowing how to operate

a computer - and using the tools - knowing how to use computers meaningfully in an educational setting" (p. 250). Doppen found that the Preservice teacher education programs did not make a connection between the technology tools and the curriculum and instead focused on learning how a specific tool works rather than the affordances that tool provides in the learning process. The traditional approach to technology instruction for preservice teacher learners "translates to the notion that technology is a skills-based discipline that is discretely conceptualized outside of the context of learning" (DeGennaro, 2010, p. 339) rather than a classroom tool that needs to be thoughtfully designed into the learning environment.

  Digital natives become teachers. When Betrus (2012) conducted his original study of introductory technology courses in 2000, many courses were focused on learning how to use Web 1.0 tools and E-Mail. While instruction in basic technology was necessary for preservice teacher learners with little exposure to technology, the era of the digital-native preservice teacher learner is upon us. As Prensky (2001) defined, digital natives are the people who are "'native speakers' of the digital language of computers, video games and the Internet" (p. 1). Digital native preservice teacher learners are those who "viewed technology as an indispensable component of their daily lives, and they strongly believed in the potential of technology to help teaching and learning" (Lei, 2009, p. 92). It is important to recognize that "As digital natives, most preservice teacher learners have sufficient expertise with generic technologies" (p. 92) and therefore should be exposed to technology as it impacts the design of lessons.

Guo, Dobson, and Petrina (2008) noted that "many young people acquire...a basic skill set allowing them to negotiate media quickly and easily [but that] does not...mean that these young people have any sophisticated critical understanding of how those media work to convey information, to influence opinion, and so on" (p. 237). While they may understand how to use various tools, simply being a digital native does not necessarily result in a deep, complex understanding of technology, its affordances, and its application to curriculum. To counter this "some institutions may have found [that] a focus on content-oriented strategies relating to technology integration has the potential to revolutionize student work, in contrast to a more limited preparation focus on teaching for literacy of specific technology tools" (Gronseth et al., 2010, p. 34). By situating the use of instructional technology in the content, it has the potential to improve preservice teacher learners' understanding of effective technology integration.

In addition to the call for content-based technology education, preservice teacher learners have personal characteristics that should be addressed as well. Funkhouser & Mouza (2013) found that "Just as preservice teachers come to their training programs with deeply-held beliefs about teaching, they also come with beliefs, established as K-12 students, about the role of educational technology" (p. 272). Lei's (2013) findings suggested the following:

> Although digital natives as preservice teachers use technology extensively, their
> use of technology has been mainly focused on and related to their social-
> communication activities and their learning activities as students. As preservice
> teachers, they lack the knowledge, skills, and experiences to integrate technology

into classrooms to help them teach and to help their students. (p. 92)

Preservice teacher learners' attitudes and beliefs about instructional technology and its use in the classroom stems from their experiences in the classrooms of digital immigrants, those who were introduced to instructional technology as a skill to be learned rather than a pedagogical tool to be integrated (Funkhouser & Mouza, 2013). Influencing preservice digital native teacher learners requires an approach where colleges of education integrate technological tools throughout their curricula, including content methods courses where instructors use instructional strategies that connect 21st century skills, tools, and content (Keeler, 2008).

Changing the tradition. In order to reach the needs of the digital natives who are now preservice teacher learners, preservice teacher education programs could break away from the traditional approach of technology education, where technology is taught as a separate, unique set of tools that are to be mastered rather than an essential instructional tool implemented into the curriculum (Bates, 2008; DeGennaro, 2010; Franklin & Molebash, 2007). Developing preservice teacher learners' understanding of technology as it relates to their curricular pedagogical skills and content area requires a coordinated and systematic effort that connects technology use to content area (Angeli & Valamides, 2009). A new tradition of preservice teacher education programs should be provided through an environment where the preservice teacher learners are able to practice integrating technology in their respective curriculum while learning affordance based design in relation to their students (Chien, Chang, Yeh, & Chang, 2012).

Restructuring preservice teacher education programs to embrace instructional

technology as integral to the process of educating students is a challenge that has many

recommendations. The core change in preservice teacher education programs that should

occur involves "moving preservice teachers from the roles of passive users of technology,

as they themselves learn technology integration, into active designers of technology"

(Chien et al., 2012, p. 579). Doing so provides preservice teacher learners the

opportunity to reflect on technologies learned, examine their use in their curriculum, and

practice the process of technology integration without the risk of failing their students'

expectations (Brush & Saye, 2009; Funkhouser & Mouza, 2013; Gibson, Moline, &

Dyck, 2011).

In the redesigned environment, preservice teacher learners have to be exposed to

various technologies that can be used in support of different activities, both teacher-led as

well as student-centered (Lei, 2009). The preservice teacher education program has a

responsibility to help preservice teacher learners "gain knowledge and experiences with a

wider range of technologies and more advanced technologies that can support their future

role as teachers" (Lei, 2009, p. 92). Additionally, it is not enough to understand the range

of available technologies, as preservice teacher education programs have to help

preservice teacher learners understand that "technology can be used as a media not only

for expression and communication, but also for inquiry and construction" (Lei, p. 92).

Therefore while preservice teacher learners are learning what technologies are available

to them, they are developing an ability to apply various technologies into the learning

environment that supports students as they develop a complex understanding of the

content and its application to solve real-world problems. In order to learn these

applications, preservice teacher learners should be provided with an opportunity to

practice the technologies and develop an understanding of the tools, "as teachers

encounter barriers when they attempt to use technology in the classroom" (Gronseth et

al., 2010, p. 34). Practicing using the tool and integrating the tool provides the preservice

teacher learners the opportunity to try and fail as they learn.

It is not enough for preservice teacher learners to learn about specific tools and

their functions, as this is how many preservice teacher education programs already

function and are found to be lacking.   Lei (2009) explained:

> As digital natives, most preservice teachers have sufficient expertise with generic
>
> technologies but are not familiar with subject-specific technologies. Teacher
>
> technology preparation programs need to emphasize the use of subject-specific
>
> technologies to help preservice teachers integrate technologies that can help them
>
> teach subject content. (p. 92)

The preservice teacher learners could experience instructional technology as it relates and

works in concert with their curricular focus. By providing preservice teacher learners the

experience of subject-specific technology, preservice teacher education programs are

enabling connections between the content and the process of technology integration,

rather than reinforcing an idea that technology and content are separate concepts (Bell et

al., 2013; DeGennaro, 2010).

The final adjustment that the literature calls for in preservice teacher education

programs is to help preservice teacher learners develop an understanding of conditions in

which technology can be integrated into the classroom (Doppen, 2004).   This includes helping preservice teacher learners understand "the enabling conditions of technology integration, and...how to locate resources and where to find help when needed" (Lei, 2009, p. 92-93). Preparing digital natives to integrate technology into classroom instruction is complex, with many challenges that preservice teacher learners have to understand. Thus, in addition to understanding the challenges, "it would be helpful for preservice teachers to have the opportunity to discuss and reflect on technology integration throughout their teacher education coursework" (Funkhouser & Mouza, 2013, p. 283). Through a process of reflections and discussions, preservice teacher learners can emulate a style of collaboration that is ideal among preservice teacher learners in the preservice teacher education program (Kay, 2006). Additionally, preservice teacher learners benefit from collaborating with peers, coaching from mentors and experts in education, and benefit from authentic context of learning to integrate technology (Bell et al., 2013). Establishing challenges, determining a solution, and discussing the actions are exercises that are extremely valuable to preservice teacher learners in the path to becoming successful technology integrators in the classroom.

All of the recommendations and determinations uncovered in the literature indicated that modeling and coaching the process of technology integration is essential to teacher success. Not only should technology integration be taught, modeled, coached, and reflected upon, but, as Kay (2006) argued, "regardless of whether the strategy is single-course, workshop, integration, multimedia-based, or a combination, it is important that every effort be made to model and construct authentic teaching activities" (p. 394).

Reflecting on these authentic teaching activities unveils an additional layer of essential information, the preservice teacher learners' attitudes and beliefs about teaching and the integration of technology in the classroom (Funkhouser & Mouza, 2013). It is these attitudes and beliefs that inform "the role which technology integration should play in teaching and learning [and is] a significant factor in determining the forms of technology integration" (Chien et al., 2012, p. 584).

      Importance of attitudes and beliefs. In a study that examined teachers' use of technology for instructional purposes in 22 school districts that yielded over 2,800 surveys, Russell et al. (2003) found that "teacher beliefs about the importance of technology for teaching was the strongest predictor of the frequency with which technology is used" (p. 302). Not only did teacher beliefs about the importance of technology predict the frequency of technology use, the use of technology for delivery and teacher-directed student use of technology were also predicted by teacher beliefs. Contrary to popular belief, teacher-directed student use of technology was not found to be influenced by teacher confidence with technology (Russell et al., 2003), which is often how many preservice teacher education programs attempt to educate preservice teacher learners on the use of technology (Betrus, 2012). Using a constant comparative analysis of 48 empirical studies covering a ten-year period, Hew and Brush (2007) found that attitudes and beliefs about instructional technology appear "to play a more significant role in contributing to classroom technology integration efforts than other factors such as having access to technological infrastructure, or support from peers" (p. 242). The findings of these studies indicated that preservice teacher education programs should look

at addressing the attitudes and beliefs of prospective educators rather than addressing basic technical skills and abilities.

Russell et al. (2003) found that when comparing the attitudes and beliefs between new teachers and veteran teachers, "new teachers have significantly stronger beliefs [than veteran teachers] about the negative impacts of technology on student learning" (p. 305). These stronger negative beliefs are especially interesting considering that the researchers found that new teachers are "significantly more confident using technology" (p. 305) than their colleagues who entered the profession 6 or more years ago. Despite preservice teacher learners' comfort and ability with technology, they still retain negative attitudes and beliefs about the technology. Russell et al. theorized that the most opportune time to strengthen teachers beliefs about instructional technology is during their preservice teacher education program, when they can be exposed to the wide variety of instructional technology uses, "specifically addressing the use of technology in the classroom for instructional delivery and teacher-directed student use of technology" (p. 307-308).

Part of the challenge inherent in preservice teacher education programs is that preservice teacher learners enter these programs with previously established beliefs, both about teaching and learning and about the role technology plays in the classroom (Ertmer, 2005; Funkhouser & Mouza, 2013). In a study of 28 preservice teacher learners' beliefs about technology use prior to completing an introduction to technology course, Funkhouser and Mouza (2013) found "that preservice teachers enter their preservice teacher education program with traditional, teacher-centered beliefs about the use of educational technology and the roles of technology-using teachers and students" (p. 281).

The preservice teacher learners' attitudes and beliefs "about technology use in educational environments are highly influenced by their experiences regarding benefits of the adoption of educational technology use" (Baran et al., 2011, p. 374). Changing these beliefs is extremely important. However, "change not only takes time, but meaningful changes in teacher beliefs are unlikely to occur in the absence of practical experiences that help preservice teacher learners witness the value of technology for their students" (Funkhouser & Mouza, 2013, p. 282). Additionally, change in attitudes and beliefs will not likely occur if technology is approached within an educational vacuum and instead requires multiple opportunities for discussion and reflection throughout teacher education coursework in which technology and teaching intersect (Funkhouser & Mouza, 2013; Keeler, 2008).

Regardless of state mandates, standardized goals, and administrative expectations, the level of technology integration in a classroom is controlled by the teacher planning and delivering a lesson. In order to truly understand and prepare preservice teacher learners, "we need to examine teachers themselves and the beliefs they hold about teaching, learning, and technology" (Ertmer, 2005, p. 27). The attitudes that teachers hold about technology and the beliefs they have about the role technology plays in education influences the way in which teachers approach the integration of instructional technology into lessons (Ertmer, 2012; Hew & Brush, 2007). Therefore, it becomes crucial to the successful integration of instructional technology to improve these beliefs, as "beliefs are far more influential than knowledge in predicting teacher behavior due to the stronger affective components often associated with beliefs" (Hew & Brush, 2007, p.

242). Additionally, in a survey-based study examining 574 practicing teachers' teaching profile and computer use indicated that "teachers with a traditional teaching profile...are less likely to use 'computers as an information tool' where the emphasis lies on the autonomous interaction between the pupil and the subject-domain content" (Tondeur et al., 2008, p. 2550), instead choosing to focus on drill-and-kill type activities where little interaction with content and technology occurs. These teachers' beliefs about technology are indicative of teacher-centric style of teaching rather than constructivist (Ertmer, 2012; Tondeur et al., 2008), where students are not directly interacting with content and building knowledge but are memorizing factual information dictated by the classroom teacher.

In a recent study of preservice teacher learners attitudes and beliefs about technology, Lei (2009) found that digital native preservice teacher learners view "technology as an indispensable component of their daily lives….yet their attitudes about integrating technology in classrooms...were somewhat reserved" (p. 92). Lei found that these preservice teacher learners were proficient with technology but only within the limited scope of using technology for social-communication activities, not as an applicable classroom tool. Ultimately, these digital native preservice teacher learners "lack the knowledge, skills, and experiences to integrate technology into classrooms to help them teach and to help their students learn, even though they fully recognize the importance of doing so" (Lei, 2009, p. 92). Additionally, preservice teacher education programs can support the development of these prospective teachers by "providing the opportunity to practice with technology...as teachers encounter barriers when they

attempt to use technology in the classroom" (Gronseth et al., 2010, p. 34). With exposure

to and practice with integrating instructional technology in lesson designs, preservice

teacher learners may develop positive attitudes about instructional technology and be

better equipped to overcome barriers when using technology in the classroom (Gronseth

et al., 2010).

Lei (2009) argued that "teacher education programs need to help preservice

teachers understand how technology intersects with content and with pedagogy and make

connections between technology, content, and pedagogy" (p. 93). The complex interplay

between content, pedagogy, and technology was examined by Abbitt (2011), who found

that "as preservice teachers develop a more complex view of the role of technology in

education...their needs for supporting technology skills evolve as well, and they are better

able to discern what technology skills are relevant to their discipline" (p. 141). Abbitt

concluded, "Preservice teachers' beliefs about their ability to use this knowledge in a

classroom environment provide a measure that can assist in assessing the success of

teacher preparation for technology integration" (p. 141). The findings support the

literature that calls for preservice teacher education programs to connect the integration

of instructional technology to specific content areas, grounding experiences in the

pedagogy of a prospective teachers' subject area (Lei, 2009; Tondeur et al., 2008).

Social Studies in Education

The role of social studies and the method of its instruction in a well-rounded

education is "frequently marginalized within the context of high stakes testing that often

privileges reading, writing, math, and science. One consequence of marginalizing social

studies is the risk of focusing primarily on content mastery with less attention to dispositional development" (Misco & Shiveley, 2010, p. 121). The focus on factual memorization instead of dispositional development leads to the perennial question, Why do I have to learn this?, which is "often asked in the traditional history class after students have been required to memorize dates and recount past events they read about in a textbook with the sole purpose (at least in the students' minds) of passing a multiple-choice test" (Viator, 2012, p. 198). Memorizing dates and events does not necessitate an understanding of the content and its implications, merely the ability to develop recall the information for a test.

Many organizations have chosen to identify the social studies as a place where knowledge "shall be viewed as factual, not as constructed, shall be viewed as knowable, teachable, and testable, and shall be defined as the creation of a new nation based largely on the universal principles stated in the Declaration of Independence" (Schools/Conflict Resolution Management, 2006). Finn and Porter-Magee (2011) believed that "social studies and history...is critical if our children are to acquire the knowledge they need to become literate American citizens" (p. 4). They continued, "Strong standards, in short, provide both teachers and students with a coherent overview of what should be taught and learned, helping teachers structure their courses while giving students and parents a clear outline of what students are expected to know" (p. 8). In an overview of 48 state social studies standards, Stern and Stern (2011) argued, "Historical comprehension is vital if students are to understand their nation and world, and function as responsible, informed citizens. The study of history is of inestimable intellectual value in its own

right" (p. 10). The Massachusetts History and Social Science Standards (2003) stated,

"Genuine historical knowledge will develop from a deepening understanding of the

relationship between the basic facts of history and [overarching themes and vital

concepts]" (p .9). These interpretations of social studies knowledge, that of factual,

definable information that standardizes instruction for the purpose of acculturation to

American citizenship, do not provide an adequate foundation for thinking in a social

studies classroom and ultimately lead to the feeling that "The traditional way history is

taught—as series of lectures, textbook reading, note memorizing, and test taking—is not

only boring to students, it is also ineffective in garnering real historical learning" (Waring

& Robinson, 2010, p. 22), which further increases the marginalization of the subject.

     Social studies curriculum. Wineburg (2001) noted that "No one who prepares to

become a social studies teacher can know all of the subject he or she may be called on to

teach" (p. 149). This observation is supported by that fact that, as an amalgamated

discipline, social studies remains an extremely broad field of study covering more than

just the study of the history of the world. Traditionally, many of the standard secondary-

level social studies courses throughout the country encompass civics and government,

world geography, United States history, and world history. In addition to the standard

studies in the social studies curriculum, many state's curricula cover non-history topics

such as Psychology, Economics, and Religious Studies (Stern & Stern, 2011).

     Prior to entering the classroom, social studies teachers cannot accurately predict

what subject they may be called upon to teach, so it is essential that they develop thinking

skills that tie together the core of a social studies education and that are not solely applied

to teaching general history courses. Barton (2011) explained that teaching history

"requires that teachers be well-prepared in their subject, that they be familiar with current

scholarship in history education, and that they have a clear sense of purpose for teaching

history" (p. 120). Barton (2011) argued for an approach that "involves students not just

in learning history but in *doing* history, so that they better understand how claims about

the past are made and justified" (p. 125) where students can learn perspective, agency,

and interpretation of evidence. The National Council for the Social Studies (NCSS)

developed a framework, the College, Career, and Civic Life (C3) Framework, that is

design as "a set of interlocking and mutually supportive ideas that frame the ways

students learn social studies content" (NCSS, 2013, p. 6). The C3 framework encouraged

social studies classrooms where students, "[apply] knowledge within the disciplines of

civics, economics, geography, and history as students develop questions and plan

inquiries; apply disciplinary concepts and tools; evaluate and use evidence; and

communicate conclusions and take informed action" (p. 6), which creates a classroom

where students are interacting with the content beyond memorizing factual information.

History and social studies function "as a tool for changing how we think, for

promoting a literacy not of names and dates but of discernment, judgment, and caution,

[and it] does not receive prime billing in the public sphere" (Wineburg, 2001, p. ix).

Wineburg argued for a curriculum that promotes skills he called historical thinking, skills

which are "...neither a natural process nor something that springs automatically from

psychological development. Its achievement...actually goes against the grain of how we

ordinarily think...it is to change the basic mental structures we use to graph the meaning

of the past" (p. 7). Historical thinking articulated skills and helped promote complex thinking applicable beyond the scope of learning history (Westhoff & Polman, 2008).

The historical thinking dispositions, that are the foundation of a historian's science, are flexible dispositions that build upon primary sources and artifacts as they help to build a picture of the past. They are "valuable in a context beyond the practice of history" because "they articulate skills and help promote dispositions of critical thinking, evaluation, empathy, and action that enable thoughtful participation in a democratic society" (Westhoff & Polman, 2008, p. 3). The specific elements of historical thinking dispositions are explained through various perspectives. For this study, these historical thinking dispositions were divided into five main components that comprise one perspective of historical thinking: Chronology, Comprehension, Analysis & Interpretation, Research, and Issue-Analysis & Decision-Making (Wineburg, 2001; Westhoff & Polman, 2008).

Chronology. Chronology is "more than discrete dates - dates [are] held together by trends and themes, patterns and perspectives" (Wineburg, 2001, p. 144). Chronology is not just understanding the timeline of human history; it is understanding how those events intersect, interact, and evolve based on those interactions and what it meant to those involved. This is due, in part, to the fact that, "history refers not only to what happened in the past but also to the account of the past events, situations, and processes. It represents accounts of multilayered and multifaceted human experiences across time and space" (Lo et al., 2009, p. 155). History lessons, "should provide learning tools to help students develop abilities and strategies to think historically, and to contextualize

their interpretation of events in terms of when and where the events happened" (Lo et al., p. 157). The concept of chronology incorporates both understanding based on time and place and reflects many state standards, but it also integrates thinking strategies that afford practitioners the ability to provide interpretations of how civilizations are shaped and formed based on the trends and themes of the present being studied.

The notion of chronology does not lead to a classroom where students are placing events in the proper order. Instead, it results in classrooms where students "think about a past possessing structure and direction that connects with and signifies for the present and future" as they "engage with a temporal concept of some subtlety and complexity" (Blow, Lee, & Shemilt, 2012, p. 32). Blow et al. (2012) found that for various groups of primary students:

> The concept of period is too difficult and contentious to serve, but students appear to accept frameworks of the past that include references to the present and speculations about the future. If successfully applied to big pictures of the human past, synoptic frameworks might enable students to construe the present as the leading edge of a past that both opens and closes doors to causally possible futures. This entails changing how students think about time in general and historic time in particular. Time passes but shadows of things past fall over what is and what may be. Only by coming to know these shadows for what they are - the long-term and usually unintended consequences of past events and forms of life - can we influence the odds attaching to more and less desirable futures (p. 33).

One obstacle to the development of chronological thinking in classrooms is the tools that are employed. As Misco and Patterson (2009) argued "History textbooks are often linear and unwieldy...and lack complex treatment of causation, ignore controversy, and convey a sense of certainty....Students find most textbooks boring...and they rarely help create connections with the present" (p. 75). They argued for classrooms to use "[chronology to] retain historical inquiry as the disciplinary focus of social studies classes" in order to build "connections with the meaningful, engaging, and provocative orientation of issues-centered instruction" (p. 87). Metzger (2010) further supported using chronology as one of the guiding principles of social studies stating, "When lessons do not connect disparate events to broader historical movements and thematic issues, students may flounder in a sea of names and dates whose collective importance remains obscure to them, with the result that their understanding comes to emphasize the merely consecutive over the interconnected" (p. 347 - 348). He provided a framing example of the Magna Carta where chronology can play a critical role in helping students understand the significance of the document, its role in the evolving politics of Western Europe, and its long lasting impact in the colonial rebellion in the Americas. Metzger concluded, "The purpose of history education is to develop in young people the ability to engage in higher-order thinking about the past and its connections to our world today" (p. 355). The skills of chronological thinking are not privately held in the study of history either. Their application as thinking dispositions in the social studies extend to economics, geography, civics and government, psychology, and other courses that might be embedded in the social studies curriculum.

Comprehension. The second thinking skill employed in historical thinking is comprehension, "which includes comprehending a variety of historical sources, differentiating between fact and interpretation, and understanding historical context" (Westhoff & Polman, 2008, p. 2). As Wineburg (2001) explained, "The comprehension of text reaches beyond words and phrases to embrace intention, motive, purpose, and plan - the same set of concepts we use to decipher human action" (p. 67). Comprehension provides students with an understanding of context to help weave together ideas, concepts, and events, engaging them in the process of connecting things into a pattern. It gives students the opportunity "to contextualize their interpretation of events in terms of when and where the events happened" (p. 157). In other words, comprehension works to help situate students' understanding of events through the examination of sources and information. It is a taught and learned process "whereby students are encouraged to examine appropriate sources in such a way as to better understand the environment surrounding the particular event or figure in question" (Russell & Pellegrino, 2008, p. 5-6).

Comprehension occurs "by having students work with materials rather than memorizing parts of the textbook [and] by having students understand and participate in the process of historical work" (Burenheide, 2007, p. 59 - 60). Engaging with material as historians do, students would interact with multiple sources, so that they learn to comprehend the atmospheres and mentalities of past cultures (Lo et al., 2009). This process can also be modeled by teachers who ask questions as a historian does, asking higher-level questions that include analysis or synthesis. In this way, students learn to

ask their own questions and to seek answers—an essential thinking skill (Karabulut, 2012).

Using a self-questioning reading strategy in a middle school social studies inclusive classroom, Berkeley, Marshak, Mastropieri, & Scruggs (2011) asked students to ask questions about the text they were reading to help develop an understanding of the content and context of the material. Similar to the thinking skills of historians, students developed their comprehension through a learned process for engaging with the text. The results "lend support for explicit reading comprehension strategy instruction in general and replicate the findings of previous researchers who have found positive effects for training students to use reading comprehension strategies" (p. 112). Their study was conducted in an inclusion classroom with a number of students who were identified as special needs children, indicating that historical thinking dispositions are not reserved solely to upper-level history students but can be generalized to many audiences as well as many subjects in the social studies curriculum.

Historical analysis and interpretation. As historians and other practitioners engage with historical material, they delve deeper into a complex series of events, where actions and reactions lead to even more complex outcomes, asking the questions which lie at the heart of historical inquiry (Wineburg, 2001). Westhoff and Polman (2008) further expanded the centrality of cause to historical thinking by stating that it leads to "comparing and contrasting, understanding multiple perspectives, analyzing cause and effect, particularly multiple causations, and...the tentativeness of historical interpretation" (p. 3). Where chronology deals with a series of events and their relation to trends and

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themes throughout history, analysis and interpretation provides "multiple reasons for why

historical events occurred and transpired in the way in which they did, and that there is

not a neat and linear progression from start to finish for a historical event" (Waring,

2010, p. 283). Historical analysis and interpretation revolves around the historical

process of deciphering root causes to larger events - causes that are often complex,

intertwined, and with multiple elements that can be explored, deciphered, and interpreted.

It is because of this complexity that historical interpretation is "a problem to be pondered,

studied, argued, and advocated, but never to be known with certainty" (Wineburg, 2001,

p. 145). History is a constructed element based on the interpretations of historical inquiry

that represents, "the product of the past as well as the processes of the historians engaged

in reconstructing it" (p. 143). Developing the product of the past is a process that student

can engage in to develop a complex understanding of historical events and issues.

Metzger provided an example of causation's effects in action using the history of

the Magna Carta. His lesson covered eight different unique causes that influenced the

creation of the Magna Carta including rising taxes, deforestation, conflicts with the

papacy, and dissatisfaction amongst the nobles. Students who interacted in the social

studies classroom devoid of historical thinking through analysis & interpretation simply

"memorize *that* history happened - not to learn *how* or *why*" (Metzger, 2010, p. 351).

Students failed to learn about and engage with the construction of historical

understanding as historians do. He found that "It is easy for children to get lost when

studying complicated subject matter and doing more than memorizing one right

answer....teaching causation requires that teachers provide careful support for student

thinking and model what it looks like to explore the how and why of the past" (p. 352), which helps to prevent confusion for students and support their learning of historical thinking skills.

Marino (2012) similarly incorporated causal thinking when he provided secondary students in New York with images of changes to the urban landscape. This lesson helped students engage with analysis and interpretation as a historian, engaging them in thinking about these changes from a demographic, economic, cultural, and sociological perspective. Students engaged with multiple interpretations and evolutions of the development of their city, ultimately allowing them to develop useful and compelling connections to understand history and made remote historical events more tangible and real. By providing students with multiple interpretations of how and why their city expanded and evolved, this lesson might just as easily been presented in an economics course teaching about the process of globalization and its effects on local economies and their growth or in a government and civics course discussing how government and state transportation policies change the structure of a city.

Historical research. Historical research is an essential component of an historian's thinking skill and lies at the core of historical thinking. Bolinger and Warren (2007) addressed the importance of historical research stating, "The persistence of instructional methods and activities that do not encourage students to see history and the social studies as investigative, open-ended, and research-based disciplines is a central paradox in social studies education" (p. 70). History and social studies is a discipline that requires research-based examination of artifacts from the past in order to enable the other

thinking skills of the field. Westhoff and Polman (2008) defined historical research as "formulating questions, obtaining information from a variety of sources, and supporting interpretations with historical evidence" (p. 3). It is through research that students and teachers can "practice historical interpretation - gathering, reading, and forming written conclusions about primary sources" (p. 27). This type of research leads students to develop "the ability to construct a reasonable narrative inter-textually by comparing sources, accounting for bias, and making reasonable explanations based on the evidence" (Fallace & Neem, 2005, p. 331). Rather than accepting what they are told from lens, students create their own historical narratives based on multiple perspectives and biases.

In practice, historical research provides students with the skills that historians use in their field and that have a role in other fields within the social studies. Westhoff and Polman (2001) asked high school students to formulate research questions as guides to their investigation of the Civil Rights movement of the 1960s. After reading teacher-provided materials on segregation experienced in northern cities in the United States, one group of students "formulated their research question: 'Why did African Americans, who moved to [their city] to escape the hardships that they faced in the Deep South, choose to stay in [their city] even though they faced segregation and discrimination?'" (p. 11). As a guiding question, students read and examined sources of information for evidence to discern a possible answer to their question. While originally a study of racial segregation, students, engaging in historical research, were also able to explore a psychological issue and examine how and why groups responded in the way they did when faced with discrimination and racism.

Yang and Huang (2007) used a computer-mediated history project with middle school aged children. Students engaged with history projects that followed thematic history lessons and were provided with computer-based critical history thinking modules. They found that students acknowledged their previous belief of history as a subject requiring only memory and repetition and "learned they should gather information, evaluate the evidence, make judgments and justify their arguments in order to re-interpret and reconstruct a historical event" (p. 2158). This study demonstrated the importance for students to develop a complex and deep understanding of historical events while at the same time developing an understanding of the doing of history and not the simple memorization of events and names. While this lesson focused specifically on history as the primary content, the study reinforced the flexibility of the research and primary source interpretation to aid other social studies subjects, such as civics and Government, where students have the opportunity to interpret arguments from law cases in order to make complex decisions.

Issues-analysis and decision-making. "History repeats itself" is often given as the danger inherent in ignoring the lessons of the past. Historical Issues-Analysis and Decision-Making is the process through which historians identify "issues and relevant historical antecedents, [evaluate] alternative courses of action, and [evaluate] the implementation of a decision" (Westhoff & Polman, 2008, p. 3). It is the process of understanding the events of the past, how they evolved, and how choices and decisions led to those events. As a thinking skill, issues-analysis "allows students to better understand the historical issues that have shaped and defined the lives they live" (Marino,

2012, p. 108).   By creating environments where students analyze historical issues and debate the quality of decisions made, teachers provide students "opportunities to see connections among historical content [that] is part of the complexity which makes historical thinking challenging" (Russell & Pellegrino, 2008, p. 5).

Simulation of deliberative bodies is one classroom practice that teachers can use to highlight specific historical realities and engage students in investigation and decision making (Pellegrino et al., 2012). Pellegrino et al. used a simulation to focus students' attention on the development of a peace treaty following World War I. Students deliberated, analyzed information, and created a structured decision based on the information they interpreted. Pellegrino et al. concluded that "The process of deliberation forces students to resolve an issue, problem, or conflict based on a thoughtful examination of the facts and their own reasoned judgment" (p. 147). As with the other thinking skills encompassed by historical thinking, issue-analysis and decision-making can be applied to any of the social studies curricula, especially when using a simulation activity where "grappling with prominent judicial trials, crisis management sessions, trade settlements, or peace treaties,...has the potential to be a pivotal educational experience for...student[s]...in order to not only discuss but also deliberate" (Pellegrino et al., p. 151). By allowing students to make decisions, they are developing an understanding of content through the interpretation and critique of complex decisions made throughout history and the social studies.

Affordances and Tools

Preparing preservice social studies teacher learners to meet the challenges of a modern classroom requires them to understand how to successfully integrate technology in support of their curricular goals. Using historical thinking as a framework for lesson design in the social studies classroom means that these preservice teacher learners will be cognizant of which affordances support the skills and abilities to think like a historian in an authentic manner. These affordances are:

the fact that the real and potential possibilities of using technology for educational purposes, the characteristics of the user, and the characteristics of the educational context, all determine the particular educational interactions that really take place between user and technology in a learning activity.(Badia et al., 2011, p. 32)

Furthermore, affordances are the "characteristics of an educational resource that indicate if and how a particular learning behavior could possibly be enacted within the context" (Bower, 2008, p. 6). For social studies teachers, they should be appropriately selecting tools that have specific affordances that support the actions of historians in authentic situations as defined by historical thinking, ranging from chronologically ordering events to analyzing historical decisions.

It is important to note that "affordances should not be considered as lists of the properties or the potential inherent in technological features" (Badia et al., 2011, p. 32). Thus, simply providing a list of tools with accompanying affordances is not an appropriate means of educating preservice teacher learners about technology affordance. Instead, it is necessary for preservice teacher learners to grasp how technology

affordances are dynamic and are identified in relation to the educational situation in which they are being implemented (Badia et al., 2011). Therefore, as designers of classroom instruction, preservice teacher learners have the ability to "appreciate the requirements within the learning context and subsequently select and utilize technologies in a way that meets those needs" (Bower, 2008, p. 14-15). Selecting appropriate technologies requires teachers to understand the properties of the technologies used while considering the characteristics of learners and many other factors that can enhance or constrain the impact of technologies integrated to support learning (Day & Lloyd, 2007). In other words, instructional technologies have potential affordances, "however, the actualisation (sic) of these potential affordances can be understood only with the reference to all the contextual factors that act to promote or constrain them" (p. 20), which include the way students understand and interact with the tool and how the tool supports complex thinking in the classroom.

When integrating technology into the classroom "we must recognize that applying technology into educational settings should aim at pedagogical goals rather than technology innovation" (Chien et al., 2012, p. 578). Social studies teacher's goals should be focused on using historical thinking to afford students the opportunity to think like a historian, engaging in critical reasoning, analysis, problem solving, and complex decision making (Salinas et al., 2011; Wineburg, 2001; Westhoff & Polman, 2008). With this in mind, instructional technology in the social studies classroom is:

> expected to be used as a tool to assist students in connecting the subject matter to their previous knowledge, arousing their questions to learning, using a variety of

learning strategies in solving problems and discovering ideas, as well as

exchanging thoughts with the learning community. (Chien et al., 2012, p. 578)

When integrating technology, preservice teacher learners should be aware that

technology affordances can support students by providing authentic and real-world

contexts, collaboration and communication with peers and experts, multiple perspectives,

higher order thinking strategies, and avenues for reflection, feedback, and revision (Seau

Yoon et al., 2005). In this manner integration of technology in the social studies

classroom "should activate students' cognitive efforts to think harder on the subject

matter presented, rather than merely to make learning fun or easy" (Chien et al., p. 584).

The process of understanding how to connect the social studies curriculum,

historical thinking pedagogy, and instructional technology affordances does not happen

automatically. It is incumbent upon preservice teacher education programs to prepare

preservice teacher learners for this challenge, as they "need to explicitly teach how the

unique features or affordances of a tool can be used to transform a specific content

domain for specific learners" (Angeli & Valanides, 2009, p. 158). In a study of 16

preservice science educators, Chien et al. (2012) found that by educating preservice

science educators through models and examples of technology integration:

The preservice teachers became aware that technology could be an activator for

arousing students to think harder about the subject matter, rather than a medium

for transmitting knowledge. They expressed an interest in more student centered

approaches by means of highlighting the interactive activities with computers. (p.

585)

It is important for preservice teacher education programs "to make explicit the cognitive processes involved in using the tool and to involve pupils in the cognitive process" (Seau Yoon et al., 2005, p. 316). Specifying the cognitive processes enables preservice teacher learners to be "explicitly taught about the interactions among technology, content, pedagogy, and learners" (Angeli & Valanides, 2009, p. 158), which in turn enables them to successfully integrate various learning tools into their lesson designs.

Course Design

In order to effectively develop and evolve positive attitudes and beliefs about instructional technology, preservice teacher learners should be provided with a learning environment that has been designed as a place where they can practice strategies for technology integration in their content area as well as have opportunities to see technology effectively modeled in their content area (Brush & Saye, 2009). A course designed in this way enables learners to observe, evaluate, experience, and practice technology integration without the repercussions of professional teaching. By providing learners an authentic challenge in which to practice their technology integration within the framework of social studies, they can develop a connection between lesson design, technology integration, and thinking skills that is personal to their career path as well as useful in preparing them to be first-year teachers (Bell et al., 2012; Brush & Saye, 2009; DeGennaro, 2010). Situating participants' learning in their disciplinary teaching area of social studies remained central to the design and enabled course content to be focused specifically on technology integration in social studies lesson design.

Using a pre-test, post-test survey of 45 preservice teacher learners that evaluated the relationship between beliefs towards technology and knowledge in TPACK, Abbitt (2011) found that "specific knowledge of the intersections between knowledge of technology and the other two knowledge domains [content knowledge and pedagogical knowledge] supports higher self-efficacy beliefs about technology integration" (p. 140). Providing preservice social studies teacher learners with an opportunity to improve their content knowledge and technology integration helps to develop positive beliefs about educational technology essential to successfully integrating technology in classroom instruction. However, as Wineburg (2001) noted, "No one who prepares to become a social studies teacher can know all of the subject he or she may be called on to teach" (p. 149). Recognizing the broad scope of social studies content, the design for EDIT 504 structured course content around the disciplinary habits of mind of social studies practitioners, historical thinking. By framing content around the historical thinking skills, learners were able to develop strong pedagogical understandings of social studies instruction while learning technology integration framed around social studies content (Abbitt, 2011; Bolinger & Warren, 2007; Bower, 2008; Fallace & Neem, 2005; Westhoff & Polman, 2008). In order to frame the content around the historical thinking skills, the social studies portion of EDIT 504 was divided into five modules, with each module focused on a specific historical thinking strand and how technology could support that method of engaging with social studies content.

To provide preservice teacher learners with appropriate exposure to instructional technology in the social studies classroom, a third design feature of EDIT 504 used an

explicit, repetitive design pattern of activities within the course. Each of the five

historical thinking strands was divided into its own module that contained a design

experience, three design examples, and a design challenge. Pamuk (2012) found, in a

qualitative exploration of 78 preservice teacher learners' integration of technology, that

modeling effective uses of technology integration in preservice teacher education

programs is necessary due to prospective teachers' lack of direct teaching experience.

These models of effective technology integration should be "carefully designed case

studies or exercises" designed to "help preservice teachers gain some teaching experience

before doing actual teaching in the real classroom" (p. 435). The design experience in

each module presented learners with a lesson design that incorporated technology to

support historical thinking skills used to solve an authentic challenge. The design

experiences in each module engaged teacher learners from the perspective of a secondary

student in the classroom to gain the perspective necessary to design for their future

students.

Additionally, preservice teacher education programs should provide "guidance in

terms of how to achieve effective technology integration into...teaching" (p. 436).

However, this guidance and modeling cannot simply be examples of classroom

integration but should also reveal the "logic behind the teacher educator's actions" (p.

436).   Three design examples were designed and presented to preservice teacher

learners in each module. These examples exposed learners to the design process used by

teachers to effectively integrate technology in social studies lesson designs. Finally,

preservice teacher learners were asked to complete a lesson design challenge which

tasked them with creating their own lesson design incorporating technology to support the module's historical thinking skill as it can be used to engage learners in a selected social studies content. Gronseth et al. (2010) argued that preservice teacher learners need opportunities to practice lesson design that thoughtfully integrates technology in order to develop confidence in their design abilities. The lesson designs in EDIT 504 afforded preservice teacher learners the opportunity to incorporate technology into lesson designs without the risks associated with implementation of the lesson in the real classroom.

Online learning and Web 2.0 tools offer preservice teacher learners the opportunity to engage in collaborative discussion and knowledge building which "can be a powerful way to help preservice teacher learners develop a critical understanding of history and their teaching through the critique and creation of new knowledge" (Adcock & Bolick, 2011, p. 226). It is important for preservice social studies teacher learners to see how technology can be integrated into their lesson designs (Lipscomb & Doppen, 2005). As a model for preservice teacher education programs, using an online model can offer preservice teacher learners the chance to deeply reflect on complex issues and analyze situations over multiple days while providing the mentor teacher the opportunity to clearly identify and redirect students who are developing misconceptions (Collison et al., 2000). As a result of the potential benefits provided by an online learning environment, the entire course was presented through an online, asynchronous learning management system. This design feature provided participants an opportunity to experience integrated technology whose affordances supported the thinking skills necessary to master content.

The course was designed using a model of preservice teacher education where preservice teacher learners experienced social studies lessons that were designed to incorporate technology that supported historical thinking skills, were exposed to the thinking and design processes practicing teachers used to be successfully integrate technology into lesson designs, and practiced their own lesson designs in an environment with limited risk where they could learn from their mistakes (Brush & Saye, 2009; Chien et al., 2012; Funkhouser & Mouza, 2013; Gibson et al., 2011). This model incorporated four course features to influence preservice teacher learners' understanding of technology, pedagogy, and social studies content. The course

1. Situated content in the preservice teacher learners' disciplinary teaching area of social studies,

2. Focused on the historical thinking strands used by practitioners, one strand in each of five separate modules,

3. Used a repetitive design pattern that exposed preservice teacher learners to technology-infused lesson designs from the perspective of students, teachers, and designers, and

4. Provided extended learning opportunities of course concepts in an online learning environment.

Summary

Research indicated that preservice social studies teacher learners are not receiving adequate instruction in technology integration. Rather than teaching preservice teacher learners to analyze the affordances of tools for their support of complex thinking skills

within the content, preservice teacher education programs remained rooted to traditional

tool comprehension courses. This gap in preservice teacher education programs could be

solved through the design of a course structured to provide preservice teacher learners

with exposure to technology that was effectively integrated into various social studies

content areas to support complex thinking skills needed to solve authentic problems.

This study explored the impact that participation in a course designed to expose

participants to these concepts had on preservice teacher learners and their ability to

design technology integrated lessons through an exploratory case study analysis.

CHAPTER THREE

This study was designed to explore preservice social studies teacher learners' attitudes and beliefs about the role of instructional technology and their ability to design technology integrated lessons after completion of a course designed to provide preservice teacher learners with exposure to technology that was effectively integrated into various social studies content areas to support complex thinking skills needed to solve authentic problems. The research that informed the methods used in this study were based on findings in the fields of social studies pedagogy, preservice teacher education design, and instructional technology. The study focused on how participants' attitudes and beliefs about technology in schools and in the social studies classroom and their ability to design technology integrated social studies lessons changed as a result of the course. Participants also provided feedback about the course to determine its effectiveness. Four research questions informed this study.

1. How do secondary preservice social studies teachers learners' attitudes and beliefs about their ability to use technology in their teaching change after participation in EDIT 504?

2. How do secondary preservice social studies teachers learners' attitudes and beliefs about their ability to use technology to support social studies learning change after participation in EDIT 504?

3. How did secondary preservice social studies teachers learners' ability to design technology integrated lessons change during EDIT 504?

4. How do secondary preservice social studies teachers learners describe their experience of EDIT 504 and how it impacted their understanding of technology integration in social studies teaching?

Research Design

The design of the study followed an exploratory case study design methodology. Yin (2014) defined a case study methodology as an empirical inquiry that "investigates a contemporary phenomenon...within its real-world context" and "relies on multiple sources of evidence, with data needing to converge in a triangulating fashion" (p. 16 - 17). Case study methodology was appropriate for this research because it addressed the analysis of a case that was a contemporary issue, specifically preservice teacher learners' attitudes and beliefs about technology use and technology integration and their understanding about designing technology-based, engaging lessons that incorporate historical thinking.

In addition, "the case study is preferred when...the relevant behaviors cannot be manipulated," and "direct observation of the events being studied and interviews of the persons involved" as well as "a full variety of evidence - documents, artifacts, interviews, and observations" (Yin, 2014, p. 12) are required. By studying the preservice teacher learners' attitudes and beliefs before and after participation in the course, analyzing their discussions and assignments during the course, and interviewing the participants after they completed the course, a case study methodology enabled a rich tapestry of the

preservice teacher learners' attitudes and beliefs about educational technology and ability to design technology-based lessons to be developed.

The research case study is exploratory in nature because the design of the course integrated three separate concepts not previously connected. The course design was instantiated in research in preservice teacher education methodology, social studies pedagogy, and technology integration concepts. The exploratory case study methodology, described by Yin (2014), required the study to be constructed using a rational argument for which the case could be studied as well as a direction from which success could be measured. The lack of previously implemented courses designed using the EDIT 504 framework necessitated the use of an exploratory case study methodology.

The design of the study as an exploratory case study required the use of multiple methods to triangulate data. The success of the case study relied "on multiple sources of evidence, with data needing to converge in a triangulating fashion" (Yin, 2014, p. 17). The use of multiple data sources enabled a deeper understanding of each case study and provided a common thread through which each case could be analyzed collectively.

This study is an exploration of a bounded system. According to Creswell (2013), bounded means that "the case is separated out for research in terms of time, place, or some physical boundaries" (p. 476). In this study, the research design examined how the attitudes and beliefs of preservice teacher learners changed as a result of their interactions within a designed learning environment, EDIT 504, which presented both physical boundaries as well as a time constraint.

The unit of analysis for the case study was the preservice teacher learners who signed up for the course and agreed to participate in the study. Yin (2014) explained that the unit of analysis "is related to the way you define your initial research questions" (p. 31). In this study, participants' attitudes and beliefs were assessed, their ability to design technology integrated lessons were examined, and the course was explored based on participant feedback. Each unit of analysis, the participant, was explored as an individual case and then analyzed collectively into a cross-case exploration.

The case study methodology "benefits from the prior development of theoretical propositions to guide data collection and analysis" (Yin, 2014, p. 17). Prior research into teacher education indicated that preservice teacher learners should be exposed to technology as it related to social studies pedagogy and methods, digital natives' attitudes and belief, and the role of preservice teacher education programs to provide an environment for practice and growth integrating tools into lesson designs. The case study methodology data are informed and grounded in the research across these three fields of theoretical analysis.

Setting

The case study took place at a large, mid-Atlantic public university with over 30,000 students. The University offers nearly 200 different degree programs including Masters' degrees in Curriculum and Instruction for prospective teachers. When the study occurred, there were approximately 200 students enrolled in the secondary education program in the College of Education and Human Development. Of the enrolled students, approximately 70 of those students were enrolled in the Concentration in Secondary

Education History and Social Studies (SECH). In the SECH concentration, preservice social studies teacher learner candidates follow a structured program of courses leading up to and following their student teaching internship. Candidates are required to take two teaching methods courses as part of a six course mandatory program. Once candidates have completed their six mandatory courses, they are able to complete their student teaching internship, a 15-week full-time teaching experience, after which they are eligible for licensure. Candidates are not required to complete any additional courses to attain license eligibility. However, they are offered the opportunity to take three additional electives and one "capstone" course to earn their Master's of Education in curriculum and instruction. Eighty percent of candidates elect to continue through to the Master's degree.

Course Design. EDIT 504 – Introduction to Technology for Secondary Teachers was one of the dozen "approved" elective options available for candidates as part of their Master's of Education. The study was conducted using an online course version of EDIT 504 as part of the extensive network of online courses offered at the University and supported by a Learning Management System-Blackboard. Using the Learning Management System tools, preservice teacher learners interacted with each other and the instructor through asynchronous online communication.

EDIT 504 was delivered as an online, asynchronous course that was 15 weeks in length. EDIT 504 began with a 4-week introduction of the concepts of authentic learning, integrated technology, and teachers use of technology affordances to support overt and covert goals in the classroom. All graduate preservice teacher learners enrolled in the course, regardless of their curricular specialty, completed the 4-week introduction

as it introduced foundational principles of technology integration and lesson design to the preservice teacher learners. The foundational principles were used in the content-specific portion of EDIT 504. Upon completion of the introduction, preservice teacher learners were divided into groups based on their curricular focus; preservice science teacher learners, preservice social studies teacher learners, and preservice English teacher learners. Each group completed a separate content specific section of the course that focused on their curriculum, methods, and pedagogy. The study began after the introductory portion of the course when preservice teacher learners began the social studies content section of EDIT 504.

  Design pattern. The social studies content section was organized into five consecutive modules, each completed by preservice teacher learners over two structured weeks. The content within each module was structured using an explicit design pattern, "a description of a problem that occurs over and over again in a field of practice" (Hathaway & Norton, 2013, p. 6), which enabled " archiving and sharing of expertise and serve[d] as a strategy for harvesting and implementing best practices in order to provide a guide for implementing solutions" (p. 10) for preservice teacher learners. During each module, preservice teacher learners were introduced to a series of readings about a historical thinking strand selected for the module, such as chronology or comprehension. The historical thinking strand served as the focal point for each activity that was completed in the module. Then, preservice teacher learners discussed the readings and their implications for classroom practice using the embedded asynchronous discussion board tool in the learning management system, engaged in a design experience from the

perspective of a classroom student, read about three design examples from the perspective of the teacher designer, and discussed the role that technology played in supporting the module's thinking skill. Finally, the preservice teacher learners completed a design challenge where they created a lesson design focused around a specific content area using the module's thinking skill. This design pattern, which provided the preservice teacher learners with an analytical strategy to "gain insight into their design problem and...capture the essence of the problem and its solution" (Hathaway & Norton, 2013, p. 10), occurred five times, once for each of the five historical thinking strands.

Module splash page. Each module started with a module splash page. This splash page contained a link to each of the four distinct parts of the module as well as a check-list of activities and requirements for the two week module. Preservice teacher learners read the checklist and were introduced to the activities they engaged in over the two weeks.

The introduction for the module used a conceptual design challenge that helped to provide an authentic environment for the preservice teacher learner in the course, which helped them to understand the role that authentic problems played in lesson design and engaged them in the activities to follow. For example, in Module 4, historical research, preservice teacher learners read a scenario where they opened an email from the National History Day foundation that challenged them to create a lesson for the NHD competition. However, they needed to understand what historical research was before they designed a lesson that incorporated historical research.

Historical thinking skill readings and discussion. In each of the five modules, preservice teacher learners were introduced to one of the five historical thinking skills which was the focus of each module. These five Historical Thinking skills were applied to lesson and unit design in the classroom and included chronology, comprehension, analysis and interpretation, research, and issue-analysis and decision-making. In Each module, participants read a portion of Wineburg's (2001) Historical Thinking and Other Unnatural Acts, the seminal work that fundamentally contributed to the ideas of historical thinking. In addition to the definition of the historical thinking category and the conceptual design challenge, preservice teacher learners read two to four research articles that detailed the habit of mind as applied to classroom instruction. These articles included technology-free and integrated technology environments to give a broad perspective of the application and use of each historical thinking strand.

Preservice teacher learners engaged in discussions using Blackboard's discussion board tool and examined their interpretation and understanding of the habit of mind and its use in lesson design. Discussions occurred asynchronously with fellow preservice teacher learners and the researcher who acted as course facilitator. The role of the course facilitator was to ask guiding and probing questions and encourage preservice teacher learners to provide in-depth analysis of the module readings. The discussions were initiated with a set of pre-constructed prompts that asked preservice teacher learners to reflect on their own learning experiences.

Design experience. The second portion of each module tasked preservice teacher learners to complete a lesson that integrated technology that supported the use of the

historical thinking category in a lesson design. The design experiences exposed

preservice teacher learners to lesson designs from the perspective of a classroom student.

Preservice teacher learners were provided an authentic problem, engaged in background

building activities, and created a product that reflected the habit's real-world application.

For example, during Module 4, the historical research module, preservice teacher learners

were tasked with writing a briefing paper on the use of nuclear weapons to the Nuclear

Arms Commission for the Joint Chiefs of Staff. In this role, preservice teacher learners

researched the reason and rationale that the atomic bombs were dropped on the cities of

Hiroshima and Nagasaki. Preservice teacher learners researched historical artifacts and

diaries from US Soldiers leading up to the dropping of the bomb, specifically reports of

the soldiers' experiences on the island of Okinawa. Additionally, preservice teacher

learners researched the implications of the bombs through historical artifacts and journals

from the victims of the atomic bombs. After their research, preservice teacher learners

wrote a briefing paper using a provided structure to answer whether or not the atomic

bomb was justified. This design example provided participants with experience into how

integrating technology can support the use of historical thinking to design a lesson where

students engaged in an authentic application of complex thinking skills. The readings,

discussion, and design experience comprised the first week of the module.

Three design examples and discussions. After the design experience, preservice

teacher learners read three design examples. The design examples were written from the

perspective of teachers integrating technology to support the use of historical thinking as

a thinking skill in the social studies classroom. Each design example covered a different

curriculum within the social studies framework to give participants a better understanding that historical thinking can be applied to any of the social studies, not just history classes. These three design examples detailed the motivation and reasoning that guided the teacher who designed the lesson and what affordances they used for each technology brought into the lesson.

The design examples covered multiple points in lesson design, ranging from background building activities to complex construction challenges, where the designer was tasked with applying the content to solving a difficult problem. One design example from the historical research module examined how a teacher used research to have their students examine the different types of alternative energy that currently exist. Students in the class created an energy action group design and developed a website to support the type of energy they felt was the most beneficial based on research that they conducted. Throughout the text, the teacher's voice included an explanation of why she chose a specific technology and how she perceived student interactions with that technology.

After three design examples, preservice teacher learners were tasked with identifying the various technologies used in the design experience and design examples as well as the affordances of these technologies. Preservice teacher learners used a collaborative spreadsheet to add additional technologies not covered in the design examples and design experience that have affordances capable of supporting the module's thinking skills. While working on their spreadsheet, participants also engaged in discussions using Blackboard's asynchronous discussion tool. The discussions focused on the design experience and the three design examples and the role that

technology played in supporting the historical thinking strand and how the teacher

designed the lesson with the affordances of technology in mind. Preservice teacher

learners engaged in these discussion with each other and the course facilitator.

     Lesson design challenge. The last part of each module was the design challenge

where preservice teacher learners were tasked with designing their own lesson integrating

technology to support the module's thinking skill in a specific content area based on an

authentic scenario. In Module 2 of the course, participants were required to design a

lesson to be implemented in their fellow teacher's classes who was out on emergency

leave. Preservice teacher learners were reminded to use the module's thinking skill to

design a lesson that examined American Legends in a US History class. Upon completion

of their lesson design using a provided template, preservice teacher learners submitted

their lesson design to the course facilitator as well as to the class wiki, a space where

fellow preservice teacher learners could read how others solved the module's design

challenge problem and comment on each other's lesson designs. The course facilitator

provided in-depth feedback on each preservice teacher learners' lesson plan as it related

to the lesson design rubric. Preservice teacher learners were given information that noted

quality work and highlighted elements of the lesson designs that needed improvement.

     Final module. The final week of the course culminated with a final reflection

where preservice teacher learners detailed their understanding of technology integration,

historical thinking, and lesson design. The reflection asked preservice teacher learners to

examine their thinking as a teacher, how the course impacted their lesson design process,

and how the structure of the course impacted their learning through a reflective essay that

used prompts to help guide their writing. Each essay was reviewed by the course

facilitator, who provided feedback on each section of the reflection (see Figure 2 for a

visual of the course design and Appendix A for a description of each module with

associated activities).
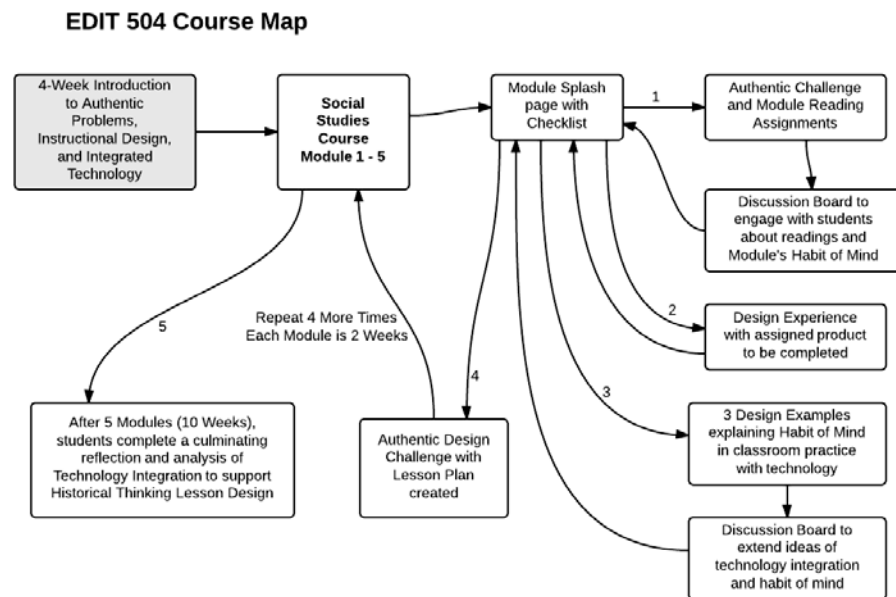
EDIT 504 Course Map

Figure 2. EDIT 504 course structure and progression map.

Data Collection

      Data collection tools. Multiple sources of data were collected to provide the

researcher with an understanding of how participants were influenced by the course.

Specifically, the data sources were used to explain how participants' attitudes and beliefs changed as a result of the course, how their abilities to design technology integrated lessons were influenced, and how they perceived the effectiveness of the course.

Survey instrument. Schmidt, Baran, Thompson, Mishra, Koehler, and Shin (2009) designed the Technology, Pedagogy, and Content Knowledge (TPACK) survey to analyze how teachers perceived their own understanding of these three concepts and their intersection. The items in the survey examined general statements about a participant's attitudes and beliefs about technology, pedagogy, and content knowledge across the core curricula.

The original TPACK survey examined survey participants' understanding of technology, pedagogy, and content knowledge as it related to science, math, English, and social studies. In order to effectively use the TPACK survey for this study, the researcher created the Modified TPCK (M-TPCK) survey (see Appendix B for the Modified TPCK survey). The M-TPCK survey eliminated all survey items that were not related to social studies content knowledge or general perception of technology and pedagogy, thus creating a survey that was focused specifically on participants' understanding of technology, pedagogy, and content knowledge in the general learning environment and in the social studies classroom. The M-TPCK survey provided an initial overview of participants' attitudes and beliefs about general technology in schools and technology use in the social studies learning environment.

Of the original 47 items in the TPCK survey, 21 items were selected for the M-TPCK measurement as they assessed a participants' knowledge of social studies content,

general technology use and knowledge, and technology use and its classroom application. The internal consistency reliability of these selected 21 items ranged from .84 to .92. Internal consistency was measured using Cronbach's alpha reliability technique on preservice teacher learner candidates who completed the survey (Schmidt et al., 2009).

Pre-course interview. Pre-Course interviews generated demographic data about participants and added additional information about their initial attitudes and beliefs about technology in general as well as its application in social studies instruction. The pre-course interviews used a semi-structured interview protocol which allowed for "creativity and insight, rather than a mechanical conversion of the research questions into an interview guide" (Maxwell, 2013, p. 101).

The pre-course interview was designed to provide a baseline for each preservice teacher learner and examined their understanding of instructional technology, historical thinking, and classroom instruction (see Appendix C for the pre-course interview script). Additionally, the pre-course interview aimed to understand what prior experiences the preservice teacher learner had with technology, both in their personal and academic life, as well as their expectations of and concerns for the course. To establish reliability, pilot interviews were conducted with two co-designers of EDIT 504. The designers were graduate students who had exposure to the course and understood the objectives of the course design. After the pilot interviews were completed, two professors with expertise in integrating technology provided peer edits to further adjust questions prior to conducting interviews.

Post-course interview. Post-course interviews examined participant growth as a results of the course design, specifically examining how participants changed as a result of the course design and course content. The post-course interviews were conducted with a semi-structured protocol which allowed the interviewer to react to participant reflections and investigate unique elements emerging during participant interviews.

The post-course interview was designed to encourage participants to be reflective about their growth during the course and examined any changes that might have occurred in their understanding and use of educational technology and historical thinking in classroom instruction (see Appendix D for the post-course interview script). The post-course interview specifically collected data on how participants' view of their understanding of technology integration, social studies pedagogy, and lesson design might have changed as a result of the course. Additional questions explored specific elements of the course design and how those elements affected their learning and mastery of course content. To establish reliability, pilot interviews were conducted and peer editing was used to adjust questions prior to conducting interviews.

Lesson design rubrics. At the end of each module, participants designed a lesson plan that incorporated technology to support the module's thinking skill and its use by practitioners to solve complex problems. The lesson designs were assessed using a rubric that examined preservice teacher learners' understanding and use of technology to support historical thinking in the social studies lesson. In order to improve preservice teacher learners' lesson designs, ten standards were assessed in their lesson designs. The lesson design rubric tasked preservice teacher learners to address common lesson plan

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and classroom instruction requirements. The requirements included addressing the standardized objective, identifying the evaluation plan, and explaining the lesson implementation process. Additionally, three standards in the rubric tasked students with explaining how their lesson design integrated technology to support the module's historical thinking skill and how that thinking skill would be used to solve a complex, authentic problem. Only these three design standards were used as data as they analyzed the preservice teacher learners' explanation of historical thinking, rationale for technology selection, and authentic thinking in relation to the lesson design. The artifacts were collected throughout the course as part of the assigned activities that preservice teacher learners were expected to complete. The lesson design rubrics were created with a collaborative design team which ensured that assessed strands connected student products to course content. The rubric is located in Appendix E and includes the three specific design standards as highlighted components.

A potential source of feedback within the lesson design process during the course was the complex feedback provided by the course facilitator. While the feedback provided each participant with constructive, targeted feedback on how their lesson design appropriately integrated technology to support complex thinking skills in the social studies classroom, it was not used as a data source for this study because it was feedback provided by the course facilitator rather than outcomes produced by the participants. The feedback process was used as part of the course structure to aid in the development of preservice teacher learners' lesson design abilities rather than a data point to inform participants' decisions.

Lesson design reflections. In addition to the lesson design, preservice teacher learners provided a one page explanation of their thinking and decision making process. The artifacts helped to determine how the preservice teacher learners processed instructional technology, how they approached its use in designing social studies lessons, and how they perceived its use to support historical thinking skills in the classroom. Additionally, the lesson design reflections demonstrated how the preservice teacher learners' ability to design lessons progressed through the course. The lesson design reflections were collected with the lesson designs.

Course reflection. At the end of the course, participants were asked to provide a final reflection that summarized their experiences in the course. Participants were asked to reflect on the content of the course, what they learned about designing lessons, what they learned about integrating and teaching with technology, and what they learned about themselves as a learner. The course reflections were designed to provide a synthesis of what participants' perceived as their growth, their struggles, and their attitudes and beliefs about integrated technology in the social studies learning environment.

Participants and implementation. All communication with participants including the pre-course and post-course interviews as well as all emails were submitted to the Institutional Review Board (IRB) for approval (see Appendix F for IRB approval letter). The study was approved by the IRB and waived the requirement for signing an Informed Consent form.

Preservice teacher learners enrolled in EDIT 504 prior to the start of the spring 2014 semester. The course was an elective for these preservice teacher learners which

provided them with an elective credit that was necessary for completion of their Master's degree. Participants were recruited from the preservice teacher learners enrolled in the course. There were eight preservice teacher learners enrolled in EDIT 504 in the spring 2014 semester and all preservice teacher learners were sent an email two weeks prior to the start of the course inviting them to participate in the study (see Appendix G for the invitation email template). In the email, each preservice teacher learner was provided a link to the M-TPCK electronic survey along with a survey key used as a unique identifier for each preservice teacher learner. This identifier was randomly generated and ensured that preservice teacher learner identities would remain confidential during the survey process. Preservice teacher learners' completion of the survey was used as evidence of their agreement to participate in the study, and they had reviewed the IRB approved Informed Consent form. Each preservice teacher learner was provided with the Informed Consent as an attachment in the initial email which explained the study in-depth (see Appendix H for the informed consent form). Even though the IRB waived the requirement for signing the informed consent form, participants were still offered the opportunity to sign a consent form if they desired. Of the eight preservice teacher learners enrolled in the course, five agreed to participate. The three preservice teacher learners who chose not to participate completed the course with no impact to their instruction, learning, or evaluation. Once participants completed the pre-course survey, they were sent a second email that asked them to schedule the pre-course interview (see Appendix I for the second email template). The pre-course interviews were conducted at a location of each participant's choosing, occurring the week before the first module of

the course. Participants were assigned a pseudonym prior to the interview to ensure their anonymity during the study. The pseudonyms and survey keys were kept in a password protected file to prevent any risk to the participants' identity.

The participants who were enrolled in EDIT 504 had all completed their first methods course and were concurrently enrolled in their second methods course and were all working towards completing their Master's degree in education. Additionally, the participants were preparing for their student teaching internships the following semester. Prior to the course, none of the participants had conducted their student teaching internship. Participants did not have any formal experience as classroom teachers. However some of the participants had informal or substitute teaching experiences. In addition to their varied backgrounds and experiences, the course was an elective so preservice teacher learners had a variety of reasons and motivations that encouraged them to take EDIT 504. The motivations included Carolyn who needed an extra course to remain a full-time student and Mort who desired to know how technology tools could be integrated to positively impact his future students. The participants, their background, and their motivation are summarized in Table 1.

Table 1

Summary of Study Participants

Name	Gender	Prior Occupation	Teaching Experience	Motivation for Course
Heather	Female	Restaurant Manager	Substitute teaching 10 years prior	Learn how to use various tools
Mort	Male	Marine	Marine Corps instructor and trainer	Learn about technology and impact on students' learning
Carolyn	Female	Student	Volunteer experience at high school	Needed 3 credits to remain full-time
Adrienne	Female	Communications	None	Learn how to integrate tools into classroom
Nicole	Female	Student	Substitute teaching	Learn technology to be a successful teacher

Pre-course interviews that lasted approximately 45 minutes were conducted during the week prior to the start of the course. Pre-course interviews were held in a location of participants' choosing or were conducted using Skype, a web—based synchronous communication tool, and were conducted around the participants' schedules. Two participants elected a face-to-face interview, and three participants elected the web-based Skype interview. The face-to-face interviews were recorded using two iPhone 5 cellular phones. The use of two phones ensured that no data would be missed in the conversations. The Skype interviews were recorded using SkypeAutoRecorder, a tool designed to record the audio stream in Skype conversations. While the first Skype interview was successful; the final two interviews failed to record successfully. I

immediately completed two field notes after each failed interview to ensure that I captured as much data as possible. Interviews were transcribed following the interviews.

Throughout EDIT 504, participants submitted their lesson plan designs as part of the course activities. Each lesson design included a one-page cover sheet that explained the participants' design decisions made during the lesson design process. The lesson designs used a template from which to begin the planning and writing process (see Appendix J for the lesson design template). When lesson designs were received, they were assessed using the lesson design rubric. The lesson design rubric was integrated into each lesson design and students were provided in-depth feedback which connected the lesson design rubric to specific elements in their lesson design plan. This process occurred five times during the course, and students completed a final course reflection after their fifth lesson design was completed.

A week prior to the completion of the course, participants were emailed and asked to schedule their post-course interviews. All participants were asked to conduct a face-to-face interview to ensure that there would be no technical limitations to collecting and retaining interview data. The interviews took place in a location of participants' choosing for convenience and comfort. All five interviews were completed the week following the end of the course and were recorded using two iPhone 5 cellular phones. All interviews were successfully captured and were transcribed following the post-course interviews.

At the conclusion of the course, participants were sent the link to the M-TPCK electronic survey along with their original identification key. Participants were asked to complete the survey and were reminded to complete the survey during the post-course

interview. Four of the five participants completed the survey. Carolyn never completed the post-course survey despite multiple attempts to contact her after the post-course interview.

Data Analysis

With multiple preservice teacher learners participating in the course, the opportunity existed to conduct a multiple case study analysis. The use of a multiple case study analysis allowed a replicated implementation, where each preservice teacher learner's experiences represented a case study within the course design. The individual case studies were explored and analyzed using the same data collection methods and were literal replications that examined how and why the results of the study occurred (Yin, 2014).

Each case study in the multiple case study analysis provided a description of the preservice teacher learner's journey through the course design. Each preservice teacher learner experienced the course through a unique lens, reacted to course content differently, and generated their own interpretations of feedback. Despite the unique results of each case study analysis, the multiple case study design necessitated a cross-case synthesis that was "a compiling of data...by examining the results for each individual case and then observing the pattern of results across the cases" (Yin, 2014, p. 238).

Case study analysis used a week-long repetitive cycle of analysis which included fully organizing data, analyzing data, interpreting data, and writing the entire case study. Each case study cycle was completed before moving onto the next case study to strengthen the validity of data analysis and limit distractions to the researcher, which

afforded a focused understanding of the data and accurate interpretation of the participant's results. During the repetitive cycle of analysis, all data for each case study was kept in its own organized binder which enabled the researcher to focus on that specific participants without distraction.

In order to answer the research questions, data analysis occurred through a method of constant interaction with collected data that included interview transcription, multiple readings of transcribed data, categorization and thematic analysis of transcribed data, analysis of lesson designs and rubrics, and assessment of survey data. Maxwell (2013) argued that " reading and thinking about your interview transcripts and observation notes, writing memos, developing coding categories and applying these to your data, analyzing narrative structure and contextual relationships, and creating matrices and other displays are all important forms of data analyses" (p. 105). He continued that although ″there is no... single correct way...your use of these strategies needs to be planned in such a way as to fit the data you have, to answer your research questions, and to address any potentially serious validity threats" (p. 105). Using Maxwell's methodology for qualitative data analysis, each participants' pre-course and post-course interview transcriptions, five lesson designs and their associated reflections, and course reflections were printed and organized chronologically.

Participants' interview data, lesson designs and reflections, and course reflections were initially coded into "organizational categories [which] are broad areas or issues that you want to investigate, or that serve as useful ways of ordering your data" (Maxwell, 2013, p. 107). The initial organizational categories focused on the research questions,

and each data source was read through and statements were categorized based on their relation to each of the four research questions. After statements were identified based on their relation to the research questions, they were placed into a spreadsheet that was organized by research question and sorted chronologically. The decoded and categorized statements were printed out and analyzed a second time to uncover the emergent themes. The emergent themes were "inductively generated through a close 'open coding' of the data" (Maxwell, p. 108). Each statement indicated the participant's understanding and interpretation of the course content and themes were developed based on statements' relation to each other as well as their relation to the research questions. As the decontexualized statements were analyzed, the emergent themes were identified and coded into "a matrix that is structured in terms of your main research questions, categories, or themes and the data that address or support these" (Maxwell, p. 108). This matrix, the spreadsheet that included the decontextualized statements organized by research question and coded into emergent themes, was used to develop the case study analysis of each participant in relation to each research question.

The survey instrument was analyzed by calculating the change score for each participant across each statement in the survey. The change score was calculated by subtracting the numerical result of the pre-course survey from the post-course survey, resulting in a change score of -2 through 1. A table was generated that displayed each participants' pre-course and post-course survey results across each statement that was used to descriptively inform the participants' case study analysis. In addition to the individual change score, a change score table was created that examined the change score

for each statement in the survey across all five participants that was used in the cross-case analysis.

Participant interviews were transcribed by the researcher during the repetitive cycle of analysis. During the repetitive cycle of analysis, each interview was read through twice and specific statements were categorized based on their relationship to specific research questions. Once the initial analysis occurred, each statement was placed into a spreadsheet, marked with a code that indicated the research question with which it was related, and sorted by code chronologically. The spreadsheet was then printed out and each statement was analyzed for emergent themes. Those emergent themes were then added to the statements in the spreadsheet, at which point each statement was sorted by theme within each research question chronologically. Analysis of participants' interviews concluded with a final reading of each statement which ensured accuracy of identified themes and categorization within the research questions.

Each lesson design and reflection submitted by participants during EDIT 504 was analyzed during the repetitive cycle of analysis in a manner similar to the participant interviews. Lesson designs and reflections were read through twice, and specific statements within each document were categorized based on their relation to specific research questions. The lesson design and reflection statements were then analyzed for emergent themes in a manner identical to that of the participant interviews. All statements from the lesson designs and reflections were combined with the statements from the participant interviews and sorted by theme within each research question

chronologically. The lesson designs and reflections were included in the final analysis of identified themes.

The lesson design rubrics were analyzed during the repetitive cycle of analysis. The scores for each of the three identified standards in each participants' lesson design results were placed into a table for each participant. The average score across the three standards was calculated for each lesson plan in each table. Finally, a figure was generated that displayed the individual scores of each identified standard across each lesson design as well as the average score of the three identified standards across each lesson design.

Where each individual case examined the preservice teacher learner's journey, a cross-case analysis created an overarching examination of themes experienced as a result of the course. In order to effectively analyze participants' research data, survey results were compiled into a single spreadsheet and compared using the participants' change scores. The lesson plans were collectively analyzed using average scores across participants to examine overall trends in their lesson designs. Additionally, the themes emerging from analysis of interview data from participants were collectively analyzed for similarities and differences within each research question. Data was filtered by research question and emergent theme, enabling in-depth analysis across all five cases.

Validity and reliability. The researcher played a prominent role in a number of elements within the study. It was essential to maintain validity and reliability within the study during key portions of the course and the study.

Researcher as designer. EDIT 504 was designed by a team of five graduate researchers and one professor in charge. Each content specific portion was designed by the graduate researcher who did in-depth research in the content area. In addition to research into social studies pedagogy, instructional technology, and preservice teacher education, the researcher used feedback from the associate professor of the social science and history program at the university where the course was conducted, who had no involvement in the course design or course instruction. The professor in charge was also consulted to ensure the course design met the overarching course standards and objectives.

Researcher as facilitator. During the course, the researcher was the facilitator of the social studies content section of EDIT 504. In order to monitor reliability, field notes were taken during the administration of the course to eliminate any potential influence on the study. The researcher used these field notes as an opportunity to separate course experiences from study participants and non-participants. The researcher maintained the role of facilitator by providing students with feedback during class activities, interacting with students during discussions, answering student questions, and critiquing student lesson designs. To limit threats to reliability in the study, the researcher did not conduct any evaluation or analysis of the participants while the course was being conducted and instead waited until all post-course interviews and surveys were completed.

Data collection and analysis. Data from the course were collected by the researcher. To prevent potential influence or intimidation between the researcher and the participant, it was clearly stated during the pre-course interview as well as initial e-mail

conversations that all grades and evaluations were conducted by the professor in charge of the course, not the researcher. While the researcher provided students with feedback during course activities which was used by the course instructor to inform final grades, the researcher did not determine students final grades upon completion of the course.

All course transcriptions, coding, and thematic analysis were conducted by the researcher upon completion of the course. Transcribing interviews by hand provided the researcher with an opportunity to become fully immersed in the participants' attitudes and beliefs about technology, social studies instruction, lesson design, and the course. This process provided the researcher with insight and context when statements were decontextualized and coded.

Summary

The intent of the study was to examine the impact of course completion on preservice secondary level social studies teachers' attitudes and beliefs about the role of instructional technology and their ability to design technology integrated lessons. Data was collected from participants using a pre-course and post-course survey that examined their perceived understanding of technology, pedagogy, and content knowledge, pre-course and post-course interviews, and analysis of lesson designs created by participants during the course. The data were examined to inform exploratory case studies about participants' attitudes and beliefs about technology in schools and their experiences in the course as well as a cross-case analysis that examined emerging themes expressed by participants.

CHAPTER FOUR

Five participants provided information about their attitudes and beliefs towards technology in schools, how technology could be integrated into the social studies learning environment, how they perceived their ability to design technology integrated lessons, and how the course structure supported their learning. This data was used to develop exploratory case studies that examined each participants' experiences as they progressed through the course. Themes were developed based on each artifacts relation to the four research questions. Once artifacts were decontextualized, the data was reexamined for emergent themes. These themes informed the analysis in each case study.

Case Study 1

Biography. Case Study 1 follows the story of Heather, a 34 year-old former restaurant industry manager. Despite her long experience working in the food industry, Heather always felt unfulfilled in her career path and decided to return to college to pursue a teaching career. Her first formal experience in the classroom occurred more than a decade ago when she worked as a substitute teacher. She fondly recalled how much she enjoyed working with children and it was those memories that helped to push her to returning to school to earn her teaching certification. Her age and experiences in school place her on edge of being a digital native. While she had limited opportunities in school to engage with technology, she frequently utilized it in her personal life as a child.

Prior to EDIT 504, Heather had completed her initial and advanced methods courses where she received a foundation in social studies teaching pedagogy, lesson planning, and unit planning. She planned to conduct her teaching internship in the fall of 2014 and complete her Master's degree in the spring of 2015.

General attitudes and beliefs about technology in teaching. In order to understand Heather's journey through EDIT 504, I first looked at the results of the M-TPCK Survey. While Heather indicated no change in four statements that specifically addressed her personal use and understanding of basic technologies, she reported a 1-point change score for the other eight statements upon completion of the course. Two statements reflected her understanding of technology in schools and dropped from agree to neutral. The other six statements focused on her technical knowledge and exposure to classroom technology and dropped from neutral to disagree or disagree to strongly disagree. The results of her survey are available in Table 2.

Table 2

Heather's Results on Pre-Course and Post-Course M-TPCK Survey General TPCK

M-TPCK Statement	Pre-Course	Post-Course
I know how to solve my own technical problems.	N	N
I can learn technology easily.	N	N
I keep up with important new technologies.	D	D
I frequently play around with the technology.	N	D
I know about a lot of different technologies.	D	SD
I have the technical skills I need to use technology.	N	N
I have had sufficient opportunities to work with different technologies.	D	SD
I can choose technologies that enhance the teaching approaches for a lesson.	N	D
I can choose technologies that enhance students' learning for a lesson.	N	D
My teacher education program has caused me to think more deeply about how technology could influence the teaching approaches I use in my classroom.	A	N
I can adapt the use of the technologies that I am learning about to different teaching activities	A	N
I can choose technologies that enhance the content for a lesson.	N	D

Note. SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

The results of Heather's surveys indicated a potential decrease in knowledge of technology and its role in the classroom or that she was potentially overconfident in her own abilities prior to taking EDIT 504. In order to understand these self-assessed drops in understanding of technology and teaching, I examined the data from the pre-course interview, Heather's five lesson plan cover sheets and lesson plans, her final course reflection, and her post-course interview. While Heather remotely participated in the pre-course interview successfully her interview recording was corrupted, so I wrote field

notes immediately following her interview to capture as many of her pre-course beliefs

and experiences as possible. After analysis of Heather's data was completed, themes

about her general attitudes and beliefs about her ability to use technology in the

classroom began to emerge. The themes that emerged were Personal Foundation (PF),

Learning (L), Teaching (T), and Authentic Application (AA).

   Personal foundation. A major theme that emerged in the second round of coding

focused specifically on the participant's individual, personal expressions of her beliefs

about technology and its use in schools. These beliefs were most heavily expressed

during the pre-course interview but provided an introspective into how Heather perceived

technology and expressed those perceptions.

   Prior to the start of the course, Heather identified her positive beliefs about the

use of technology in general, recognized first and foremost in the fact that she believed

she could not be successful without her smartphone located within arm's reach at all

times. She used this smartphone to engage in social media, Facebook, and specifically

noted that she gets "all my news from buzzfeed if that tells you where I get my

information from!" In addition to the need to be constantly connected using the phone,

she always downloaded and tested apps to determine their usefulness to support her

lifestyle.

   Heather's personal foundations influenced her attitudes and beliefs about

technology and extended much further than her smartphone. She expressed that she did

not see any negatives to the growing reliance on technology and was excited to see much

of the science-fiction technology from movies and books begin to dominate the world.

Heather began the course with an excited and positive perception of technology and its uses in the personal lives of people.

By the end of EDIT 504, Heather did not believe in a cavalier approach to integrating technology, choosing to use it simply because it exists. She specifically noted that while certain technologies exist in the classroom, like SmartBoards, "you can do the same thing with a chalkboard or an overhead." She indicated a need to be thoughtful about their use based on their affordances before deciding to integrate them into lessons, so that "students use technology to show me what they've learned."

Learning. Learning was defined as the participants' expression of their beliefs in relation to their own learning and the learning of students in classrooms when using technology during lessons. Heather started the course with an understanding of the role that technology played in supporting learning from her own experiences. She extended this understanding by analyzing potential interactions future students would have with technology in her lesson designs.

Prior to the start of EDIT 504, Heather believed in the value of technology in supporting learning and her own understanding of course material. She expressed a need to be constantly connected to classroom material and a desire to get support whenever necessary. Since many of her graduate courses used a Learning Management Site, Blackboard, to support learning, she specifically noted how helpful it was to have that tool available to her and said that she loved the ability to respond immediately to classroom prompts during any downtime which allowed her to work and learn simultaneously.

Heather identified her beliefs about technology in the course reflection, stating that "As a student, using technology in the classroom has many advantages." The positive beliefs about technology and its ability to support learners with various needs and expectations is further explained and defined by Heather who noted that using tools like Glogster and Tiki-Toki "to complete assignments gives students more autonomy to control their learning, therefore keeping them more engaged and invested."

As Heather progressed through the course, her interactions with course material and activities led her to develop an understanding of the teacher's role in supporting learning using technology. While learning focused on the role that technology played in supporting a student's ability to learn complex content, Heather recognized the importance of the teacher and lesson design that recognized the affordances of technology tools, which she described in-depth in her course reflection.

> Teachers can keep lessons and material organized online and students can access that material from home if they need additional practice. Also students who miss class can access the material without any extra work by the teacher. Teachers can also provide students with more information about topic[s] they might be interested in an online forum, allowing students to increase their understanding and remain engaged in the content.

Teaching. In addition to her expressed beliefs about technology as it affected students and their learning, Heather also expressed her beliefs about technology as it affected teachers and the teaching process. This theme initially emerged as Heather's

interpretation of her informal teaching experiences and evolved into how she believed technology could support the teaching process.

Before beginning EDIT 504, Heather's beliefs about technology as it affected teaching related to her informal teaching experiences. She recalled her experiences as the technology teacher for her friends and family as she pushed for those around her to learn and use the technology that she loved using herself. These attitudes about teaching technology in her personal life stood in contrast to her beliefs about technology that supported teaching in her academic life prior to EDIT 504. Not only did Heather specifically remark that she did not think anyone is confident with or using Smartboards correctly, she had trouble remembering any technology in the classroom that was not used for the purpose of direct instruction.

Heather's most negative experience prior to EDIT 504 revolved around a teacher's paperless classroom that she observed. She remembered seeing a teacher who spent his time behind his desk, grading papers while students completed worksheets on computers every day, and specifically noted that she believed it was a false application of technology. While she looked upon the integration of technology in this situation negatively, she noted that it was because the teacher was told to use technology and did not know how rather than a negative belief concerning the technology itself.

As she progressed through EDIT 504, Heather developed more concrete expectations and explanations of how technology could support the teaching process. She believed that, "there are many tools in the online learning environment that are beneficial to a traditional classroom," taking lessons and ideas from the online

environment of EDIT 504 and recognizing their application to traditional teaching environments. Additionally, Heather noted that teachers have the ability to provide students with specific content and information that they might be interested in, using technology to "increase their understanding and remain engaged in the content."

Heather concluded in her course reflection that technology could effectively support good teaching and lesson design. She explained that "using technology for the sake of using technology should not be a part of lesson design. Instead finding ways to integrate technology appropriately that support the goals of the lesson should always be at the forefront of lesson design."

Authentic application. EDIT 504 presented preservice teacher learners the value and importance of framing lessons around authentic challenges that help students to engage with content in a realistic manner, where technology tools were assessed for their use in supporting authentic learning. Authentic Application was defined as the participant's expressed ability to use technology and engage students in an authentic manner of instruction, where technology was used to support thinking and software skills in real-world applications that stretch beyond the classroom.

Heather recognized the value of technology at the start of the course, noting that whether it was for work, school, or life, people needed to learn technology. She expressed that she was not afraid to use technology or to learn it, and that this open attitude about technology had been her approach to technology her entire life. As a student growing up in rural Ohio, she used her family's laptop to design posters for her locker, but her experience of practical and real applications of technology extended

beyond her personal use for decorative purposes. She recalled how amazing and comforting it was to be able to talk with her brothers who were stationed in Iraq and Korea on a near-daily basis compared to her Grandmother who received letters from her Grandfather during World War II once every three to four weeks.

These experiences influenced Heather's attitudes and beliefs about technology's authentic application and use in lesson design throughout EDIT 504. In her third lesson plan, where Heather asked students to examine a school district's budgeting process, she explained that, "While this lesson is not focused on a specific technological tool, it does reinforce basic computer skills that are necessary for students both in and out of the classroom." In her fourth lesson about the Holocaust and various genocides throughout history, she extended her vision stating, "By requiring students to use Glogster, they are reinforcing their skills of manipulating multimedia to create visually stimulating presentations, a skill that is useful in many workplace environments." Heather's recognition of the importance of technology's authentic application beyond the classroom was stressed in her course reflection as well. She highlighted the importance of "teaching students how to responsibly use the Internet to find information [as it] can help them to navigate the dangers of identity theft on the web and help them to recognize situations that are potentially dangerous online."

Heather's recognition and appreciation for the use of technology in authentic applications also extended to the use of specific tools in the classroom. When asked about SmartBoards in the classroom, she explained that "obviously it's technology and it's in school, but ummm, I mean you can do the same thing with a chalkboard or an

overhead." Rather than integrate technology just because it existed, Heather indicated

positive overall beliefs about technology while remaining focused on the need to use the

affordances of technology tools to support an authentic application for students, and

explained that "You don't want to just use it to use it. You want to use it so that it has

value. I guess it's just like, you know, other lessons in your classroom, you don't just

teach it to teach it, you teach it because it has value."

Attitudes and beliefs about technology in support of social studies learning.

Nine of the statements from the M-TPCK survey related directly to the preservice teacher

learners' perception of their understanding of social studies teaching methods and the role

technology played in supporting those methods. Heather's survey indicated that five of

the statements did not change for her. Four of these five statements dealt only with

pedagogy and content knowledge and her perception remained neutral. Heather reported

that her beliefs that "I have sufficient knowledge about social studies" shifted from

neutral to agree. Her self-reported beliefs about integrating technology in the social

studies curriculum dropped by one point, from neutral to disagree. The results of

Heather's survey are summarized in Table 3.

Table 3

Heather's Results on Pre-Course and Post-Course M-TPCK Survey Social Studies TPCK

M-TPCK Statement	Pre-Course	Post-Course
I have sufficient knowledge about social studies.	N	A
I can use a historical way of thinking.	N	N
I have various ways and strategies of developing my understanding of social studies.	N	N
I can select effective teaching approaches to guide student thinking and learning in social studies.	N	N
I know about technologies that I can use for understanding and doing social studies.	N	D
I am thinking critically about how to use technology in my classroom.	A	N
I can teach lessons that appropriately combine social studies, technologies, and teaching approaches.	N	N
I can select technologies to use in my classroom that enhance what I teach, how I teach, and what students learn.	N	D
I can use strategies that combine content, technologies, and teaching approaches that I learned about in my coursework in my classroom.	N	N

Note. SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

The results of Heather's survey indicated that while she does not wrestle with social studies content or pedagogy, she does have trouble finding appropriate tools to support social studies instruction as well as designing lessons integrating those tools. After analysis of her data, three major themes emerged as influential in Heather's attitudes and beliefs about technology. These themes were Technology and Preparation/Planning (TPP), Technology and Student Engagement (TSE), and Technology and Student Outcomes (TSO).

Technology and preparation/planning. This theme emerged as an indicator of

Heather's beliefs about her ability to select appropriate technology tools to support her

lesson design. This theme was directly identified when she explained her thinking

process about how a tool supported authentic instruction in the lesson, how she chose the

tools to support her teaching, and how she ensured the tool supported her students'

learning during the lesson.

During the pre-course interview, Heather indicated positive attitudes about using

the Internet as a vehicle for finding different methods of delivery for instruction. She

indicated her desire to find lesson ideas and concepts from museum websites. Prior to

EDIT 504, Heather believed that using technology to prepare and plan lessons involved

basic resource identification.

As Heather progressed through the course, her lesson plans showed a developing

sense of the role that technology played while she prepared backup plans in case of

unavailable resources. In her third lesson plan about the economics of a school budgeting

process, she noted that because of "the online nature of the assignment [students] will be

able to continue their work at home if necessary." Additionally, she recognized in the

second lesson plan where students explored the achievements of Benjamin Franklin that

if a resource was unavailable "students can complete a poster board representation of this

timeline, but will still need to include images." In her final lesson plan, Heather

expressed her belief that technology helped to support the teacher's instruction because it

allowed her to "quickly and efficiently assess student prep work for the debate, allowing

me to prepare as a debate mediator to direct the debate in favor the students'

preparation."

Heather indicated in her post-course survey that she was challenged to use

technology in social studies instruction. She explained in her course reflection that

"Initially it was hard for me to incorporate technology in my lesson design." Despite

these challenges, she recognized and believed in the importance of using technology to

support lesson design and argued that "teaching with technology provides us with

opportunities to teach students skills that will extend to their life outside of the classroom,

especially in social studies."

Despite Heather's positive reflections of the course, in the post-course interview

she indicated how much she continued to struggle with the preparation and planning of

lessons that incorporated technology and said "I came up with these great objectives, then

I was trying to find a way to incorporate the technology into them, which was kind of the

hard part most of the time." One of Heather's challenges in preparing and planning

lessons revolved around finding tools to support instruction and stated that "I would

never have thought to use Google Maps in the classroom….because that's how I get

driving directions….I never would have applied it like that." This struggle continued

through the end of the course for Heather, and she believed that the tools she was finding

to integrate into the classroom left her feeling that "a lot of the stuff I did I felt like I

could do without the technology...so that was the challenge for me."

Technology and student engagement. The second theme that emerged focused

on how the teachers' preparation and planning turned into students engaging with

technology during the lesson. This is how the participant expressed her belief that technology would serve to help students solve a problem and how students would use technology to interact with and think about the social studies content.

Before the course, Heather recalled two very important memories about how she had seen students engage with technology in the social studies. Her first experience was in high school, where her class went to the library and used the Internet to find books in their library when they could have just used the card catalogue to find the books themselves, and she remembered struggling with this activity while the teacher at the time mused about the silliness of the exercise. Her second memory occurred in her classroom observation, as Heather recalled a teacher who sat behind his desk not working with students as they merely completed worksheets on a computer. Heather believed that this was a poor application of technology and did not support student engagement with the content in any way.

From her first lesson to her last lesson, Heather expressed a belief that technology tools served to support student comprehension of complex social studies content while it enabled them to solve complex, authentic problems. In her first lesson about the ancient river valley civilizations, she used Glogster which allowed "students to create virtual posters that also incorporate graphics, video and audio files, and images for a more in-depth presentation of their knowledge." In her fourth lesson about the Holocaust, she had students research specific historical figures and noted that it would be essential "that they learn to navigate through information that is salacious and opinionated in order to find

evidence that can be used as a trustworthy source." Her lessons displayed a belief in using technology to increase engagement with content to support student learning.

At the conclusion of EDIT 504, Heather expressed a belief that thoughtful use of technology supported students' engagement with the content to solve complex problems in social studies. She believed in the power of technology tools as part of the curriculum, teaching "students how to source information; which helps them to separate fact from opinion and understand contemporary issues in a non-biased light." Additionally, she displayed an attitude that was excited to use technology to support and engage students in strong pedagogical skills learned in her methods courses. She noted that when it came to group projects and collaborative work "with technology, you know, you can use...the students can work together to create products that are visual and interactive and they can do it collaboratively and...with most technologies they can do it from wherever they're at."

Technology and student outcomes. The final theme that emerged across Heather's artifacts was how integrated technology tools supported student outcomes in social studies instruction. Often times, these student outcomes were the products that Heather expected students to create and how these products displayed what students have learned using technology to present these outcomes.

Initially, Heather believed in the power of technology for students to consume information. In her pre-course interview, she noted how students could individually read an article or a book or watch a video. Each of her anticipated student outcomes relied on technology to afford students the opportunity to consume information.

As Heather began designing lessons, her attitudes about technology and student outcomes changed, and she created expectations for products that asked students to use technology tools to synthesize information and create clear products that displayed a conceptual understanding of content and its application. In her second plan about Benjamin Franklin's achievements, she asked students to analyze and synthesize information using "Tiki-Toki in order to create timelines that incorporate images into the significant events of Franklin's life." She further noted that "using Tiki-Toki promote[s] students' ability to manipulate text, images and video into an organized and coherent visual representation of their task." In her fourth lesson plan, Heather expected that "using this technology allows students to convey their data in a manner that is interesting to their audience and helps them to make their argument while displaying their historical data."

While Heather began the course expecting student outcomes to be focused on consuming social studies content, her attitudes and beliefs evolved as expressed in her lesson plans. She culminated her evolving thoughts in her post-course interview where she said, "I do think that the skills that they learn from using those types of programs and from displaying, you know, what they're creating in different ways is very important." She expressed her continual struggle with her ability to integrate these tools by concluding, "Umm...it's so hard."

Ability to design technology integrated lessons to teach social studies. Data from Heather's artifacts were analyzed for their relation to how the course influenced her ability to design technology integrated lessons to teach social studies. The majority of

the data in this category came from Heather's lesson plans as well as her lesson plan

reflections which explained her thought process behind the lesson design.

The results of Heather's lesson plan rubrics indicated that she quickly grasped the

complex process of creating an authentic problem that asked students to use technology

to support complex historical thinking skills to solve the problem. Out of a possible eight

points on each of the three strands, Heather earned a maximum score on four of her five

lesson designs, only struggling on the second lesson plan, in which she asked students to

analyze the importance of Benjamin Franklin's life in comparison to other important

American figures. While examining the results of Heather's lesson plans, it appeared that

she did not struggle with designing technology integrated lessons. The results of

Heather's lesson designs are summarized in Figure 3.

Heather's Lesson Plan Scores
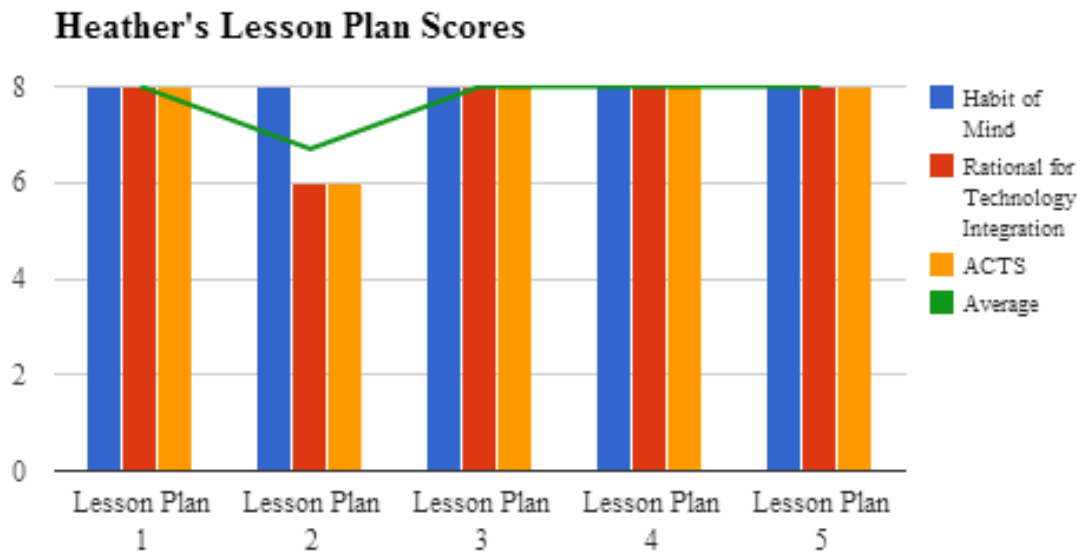
Figure 3. Heather's Lesson Plan Scores and Averages

In addition to the results of Heather's lesson plan rubrics, data captured from the post-course reflection and interview. Once decontextualized into a spreadsheet, three major themes emerged about Heather's lesson design process. These themes were Social Studies Goals (SSG), Authentic Thinking Skills (ATS), and Technology Use (TU).

Social studies goals. When designing lesson plans, teachers need to be aware of both their overt goals, what social studies content they are expected to cover in the lesson, as well as their covert goals, what complex concepts and thinking skills do teachers want their students to use and take away from the lesson as they engage with the content. As Heather's lessons were analyzed, it became apparent that identifying the lesson goals was important in recognizing her ability to design technology integrated lessons.

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One goal that motivated Heather in her lesson design process was considering what she was going to teach students and why. For Heather, answering the question of "why" was more important than the overt goals that she was expected to teach. She pulled from her own experiences as a high school student, sitting in class and asking herself "why do I need to learn this." If she or the teacher couldn't answer that question, she didn't pay attention to the lesson.

As Heather began designing lessons in EDIT 504, addressing the "why" was immediately apparent in her first lesson when she stated that "the goal of this lesson is to help students connect the society and culture established in the ancient river valley civilization to four major metropolitan areas within those regions that still exist today." While she was always aware of the overt goals of Standards of Learning (SOL) content, she worked to design lessons that incorporated meaning and application beyond the classroom. As she reflected on her third lesson, she identified that her "goal was to have students analyze and interpret data that was relevant to their lives, and then apply that analysis as an intelligently constructed position in a classroom debate." By the fifth and final lesson plan on civic responsibility, Heather combined her need to tell students "why", he requirement to address SOL content, and incorporated complex thinking activities that encouraged "student capacity to identify and defend ethical dilemmas that affect our citizens in today's political environment."

For Heather, lesson design was motivated by her personal experiences in school. She noted that "assignments with purpose and real world application definitely peaked my interest more than those that I perceived as having little value, and I will definitely

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bear that in mind when creating lessons for my own classroom." Extending beyond her personal experiences, she developed an understanding that "there are important skills to be developed in a social studies classroom, and as a teacher it is important for me to model those skills to students through the assignments and assessments that I include in my curriculum." In the post-course interview, Heather reflected on her experiences as a student and how that impacted her lesson design in establishing successful goals, saying "that was one of my problems as a student, even in undergraduate, was not understanding why I was doing thing….it has to have value to the kids, and just saying "oh will be on your SOLs" doesn't have value."

Authentic thinking skills. The second theme that emerged from the lesson design data revolved around how the participant designed their lesson around an authentic problem in which students used historical thinking skills and the lesson content to solve. This theme is the combination of historical thinking skills that are used by practitioners to engage with historical content and the application of authentic problems to frame content in a manner that is practical and real for students. The data came entirely from lesson plans and lesson plan reflections and conversations in the post-course interview with the participant.

In her first lesson plan reflection, Heather noted that she was very successful at designing her lesson to incorporate technology, but struggled to find an authentic problem "that was contemporary and non-trivial but still offered students the opportunity to analyze and synthesize information." She also expressed concern that "finding ways to creatively engage the students and not saying do this because I said so...is going to be my

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biggest struggle in the classroom." Heather indicated her struggle developing authentic

problems in the fourth lesson plan which covered 20th century genocides, explaining that

"While developing this assignment, it became very clear to me that framing this standard

authentically and within the scope and sequence of a classroom was a truly challenging

task."

Despite these struggles, Heather's continued work ended with her using historical

thinking skills to solve a challenging problem "By helping students develop a

hypothetical framework for their future lives, I hope to help them comprehend the

complexities of financial responsibility for taxes." She asked students to "make a

reasoned and informed decision of tax liabilities and how our government should or

could change the current system," which engaged them in a series of complex historical

thinking skills to solve a problem that is real and practical.

During the post-course interview, Heather made it clear that the historical

thinking skills were not the area she struggled with when designing lessons. She clearly

and emphatically stated that "historical thinking is definitely gonna be a huge part of my

classroom." However, she continued to wrestle with designing an authentic problem that

engaged those thinking skills. She expressed concern that "I'm kinda having a problem

with the authentic problem because to me it just kinda sounded cheesy half the time."

Despite her concern over the "cheesy" nature of the authentic problem, she believed in

the power of authentic problems that engaged students in historical thinking skills, "just

because it makes the kids think like people who would actually be doing...ya know...that

whole like expert using the tools that experts use and things like that." Near the end of

her interview, she recognized her evolving skill in developing engaging authentic thinking skills when reflecting on one of her lessons, "I don't know, that idea just came to me….yeah, congress would do something like that, something stupid like 'no he's not the president, he can't be on the money.'"

Technology use. The final theme that emerged in Heather's data was the way in which she incorporated technology into her lesson designs. Here, technology use is not how Heather used it, rather it is how she thought about and addressed the affordances of various tools, how those affordances supported the historical thinking skills of the lesson, and how the technology supported the solution of the authentic problem in the lesson design. With no foundation in designing lessons that integrated technology, data for this theme came from her lesson plans, lesson reflection, and course reflection.

In her first lesson plan about the ancient river valley civilizations, Heather struggled with designing the lesson as a whole. She used an idea from a previous lesson, built "off what had worked in her classroom, [and] added the technology Glogster to her idea." Her lesson design incorporated the tool as a means to using technology rather than appropriately designing and selecting the tool based on the way that tool supported specific thinking skills in her lesson. However, by the third lesson plan in which students analyzed a public school budget, Heather started to think about the role technology was playing in her lessons to support specific thinking skills, writing that "I chose to keep the technological aspect to a minimum in order to concentrate on developing the student's ability to construct a reasoned argument with evidence to support their claims." In this lesson, she specifically asked "students to source their Internet information...to

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understand who is supplying the info and what is their agenda" and recognized the affordances of the various tools she incorporated to ensure they supported the thinking skills rather than place unnecessary technological burdens on the students.

By the fourth lesson where students developed digital posters exploring genocides throughout the 20th century, Heather more directly addressed the role that technology played in supporting students' thinking skills and how that role helped students to solve the authentic problem to create a clear product. She argued that "Rather than using a traditional essay to make their argument, where students could only cite from documents the audience would need to access...this format flows more naturally from the problem and allows students to create an interactive product." She further expressed her understanding of technology use in lesson design as well as her evolving understanding of the role technology plays in her lessons during her course reflection. She explained:

> Designing lessons around technology does not help us teach higher order thinking skills or content in an effective manner, and we should always be mindful of how the technology we are incorporating affords the goals of the lesson we are teaching.

By the end of EDIT 504, she believed that, "When integrating technology into student learning opportunities, it is important to remember that the objective of the lesson needs to be supported by the technology."

Impact of course design on participant learning. Participants were asked to provide information about their interactions with the course structure and how it impacted on their learning. Heather's post-course interview and course reflection contained a

number of data points that explored her learning through the course structure and design. Once these data points were decontextualized, three major themes. These themes were Course Design (CD), Teaching Content (TC), and Learning Activities (LA).

Course design. As a major theme, course design emerged as a result of how Heather expressed her feelings over the arrangement of course material, how she progressed through the course, and how the physical design impacted her learning.

Initially, Heather believed that the course, "was gonna be a little more hands on in that respect, like with actual physical things." She also noted that she "originally thought it was going to be like here's how you use a Smartboard." Her initial expectations for the course design anticipated a training environment with physical interaction with fixed classroom tools rather than an examination of social studies methodology, pedagogy, and technology integration. During the post-course interview, Heather explained, "I don't really think it failed any of my expectations...it definitely gave me tools, it just wasn't the tools I originally thought it was going to give me, which isn't a bad thing at all." She further noted, "It's not like I'm missing out on those things."

In addition to the approach used to teach about technology tools, Heather noted the "repetitive portion of the class I liked because it was like, ok, present me with a problem, now I'll fix the problem, present me with a problem, now I'll fix the problem, I felt that was very useful." In addition to finding the repetitive design of the course supportive and helpful in her learning, she also found the medium in which the course operated to be supportive. She expressed, "I think its best in an online format...just

because...it reinforces what you're trying to do just by being in an online format. Like, here's the technology...we're doing this through technology."

Teaching content. While the course design focused on the structure of the course in supporting participants' learning, a second theme emerged that focused on the content of the course. Teaching content revolved around observations made by Heather that indicated whether or not the content of the course was applicable to social studies instruction and whether or not she felt it was appropriate and helpful to her future career as a classroom teacher.

Heather reflected very positively on the teaching content of the course, explaining that "each of the habits of mind that we discussed have given me a great sense of the concepts and ideas I need to provide in my classroom in order to be an effective social studies teacher." She further reflected on the importance of historical thinking as a set of thinking skills that can be used to solve complex, authentic problems in her post-course reflection.

> Students who have a thorough understanding of historical chronology,
> comprehension, research, issue-analysis and decision-making, and analysis
> develop more of the higher order thinking skills we as educators hope to instill in
> our students. These thinking skills are essential for students both in academia and
> in real world settings, and using history content to frame these skills gives
> students the opportunity to practice and hone useful abilities such as evaluating
> information, separating relevant from irrelevant information, making reasoned
> and informed decisions and even predicting outcomes. History content should be

based on much more then recall and recitation, and keeping these thinking skills

in mind helps teachers be more effective in our goals.

In addition to her positive reflection on historical thinking skills and their

importance in the social studies classroom, Heather indicated a sense of purpose, noting

that "As a teacher, I now understand that I have a responsibility to help students

understand that history and social studies is more involved than memorizing dates and

facts for a multiple choice test." While Heather said that the "five habits of mind that we

did were not necessarily new concepts, but definitely got more in depth than I had seen

them previously," this reintroduction and detailed exploration of historical thinking was

useful in terms of technology integration because she had "never really thought about the

affordances before." Ultimately, Heather summarized the teaching content of the course

very succinctly, "the content of this class was awesome. I absolutely loved it."

Learning activities. The final theme that emerged as influencing the participant's

learning in EDIT 504 was the learning activities that they completed. These learning

activities covered the course readings, class discussions, lesson experiences and

examples, and the lesson plans that participants created.

In her course reflection, Heather initially stated that "Through the assignments of

this class I have gained a better understanding of how engaging creating different types of

assignments can be, as opposed to simply writing essays for every topic." Despite this

broad statement, it was later revealed in conversations with Heather that she was referring

to the design experiences and examples where students directly engaged with technology

tools used to support historical thinking to solve an authentic problem. Heather noted

that the "exercises were great, I really enjoyed doing them" and that "they did offer me a

different perspective on how to use it in the classroom." Even with the experiences and

examples supporting her learning, she still felt that some were better than others and

noted that "Some of them...some of them sound really awesome, like there was one...you

know, the road trip one from the last one...kids would eat that up. There are some that

have a lot of value to them but...they're not always going to have value to the kids. That

was the thing that I struggled with the most I think." Additionally, Heather felt that the

design experiences had a habit of being overwhelming at times, but she did say that she

enjoyed "the experience of creating tours and maps with content...and that these

experiences earlier in my education would have been immensely beneficial."

Heather's biggest struggle with course came from the discussion boards that were

supposed to follow the course readings as well as the design experience and examples.

She felt that, "asking the same questions every single week, was...uhh...boring" and that

"it was very repetitive" to be answering the same questions each week. She expressed a

desire to see some variety in these discussions and to offer students a different way of

interacting with the material during this portion of the course.

Despite these struggles, Heather provided very positive feedback about the lesson

plans that they were asked to design at the end of each module. Compared to previous

courses, Heather was asked to produce significantly more lesson plans than she had ever

done, and "I would say that I enjoyed being put into that situation so that I could...ya

know...produce and get feedback on what I was doing." Even when asked to design

lessons in a curricular area that she was uncomfortable with, she expressed positive

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feedback, saying that "I think forcing me to do an economics lesson plan was great, because I never...I can't even tell you anything about economics. I was seriously looking up like textbook websites. I don't know what this means!"

Summary. Heather had a positive experience in EDIT 504 as she interacted with complex material that challenged her preconceived notions about social studies instruction and technology integration. While her personal foundations in using technology on a regular basis indicated a positive overall belief about the use of technology in the classroom, she wrestled with effectively developing authentic scenarios in which to use the affordances of various tools to support complex historical thinking skills. Her self-perceived comfort with technology and social studies instruction changed as she was challenged by course material and progressed through the course. Despite some challenges with some of the lesson activities in the course itself, Heather expressed an evolving understanding of the complexities of lesson design and the role technology played in supporting students' understanding of course content as it relates to solving authentic problems using complex historical thinking skills.

Case Study 2

Biography. The second case study followed the journey of Mort, a 52 year-old retired Marine who switched careers using the GI Bill. Mort spent his time in the Marine Corps as a radio repairman, eventually becoming a training officer responsible for the instruction of new Marines. His experience in the Marine Corps was filled with multiple formal and informal teaching opportunities which ranged from martial arts to electronics. When reflecting on his teaching experience in the Marines, Mort jokingly recalled "I

never had any training on teaching, I should have, after what I've learned in these classes already I'm like 'wow'." Due to his age and experiences, Mort would not be considered a digital native, as he did not have regular access to digital technology in school or his personal life. Mort finished his undergraduate degree in History while beginning his work on Graduate level education courses. EDIT 504 was his first graduate level course in education. He moved to Florida, where he hoped to complete his Master's in Education and find a teaching position.

  General attitudes and beliefs about technology in teaching. The M-TPCK Survey revealed a basic understanding of Mort's general attitudes and beliefs about technology. Mort indicated that four statements did not change from the beginning of the course to the end, remaining neutral. These four statements related directly to Mort's perceived ability of direct technology use whereas the other eight statements dealt with Mort's perceived ability to research technology and ability to integrate technology into learning experiences. Mort reported a drop in all eight of these categories with six dropping from agree or neutral to disagree, indicating a change in his general attitudes and beliefs about technology in teaching. Two of the statements dealt directly with the participants perceived ability to select and adapt technologies for classroom instruction, and Mort reported a two point drop for these two statements, from agree to disagree. The results of the survey are summarized in Table 4.

Table 4

Mort's Results on Pre-Course and Post-Course M-TPCK Survey General TPCK

M-TPCK Statement	Pre-Course	Post-Course
I know how to solve my own technical problems.	N	N
I can learn technology easily.	N	N
I keep up with important new technologies.	A	N
I frequently play around with the technology.	N	D
I know about a lot of different technologies.	N	N
I have the technical skills I need to use technology.	N	D
I have had sufficient opportunities to work with different technologies.	D	D
I can choose technologies that enhance the teaching approaches for a lesson.	N	D
I can choose technologies that enhance students' learning for a lesson.	N	D
My teacher education program has caused me to think more deeply about how technology could influence the teaching approaches I use in my classroom.	A	N
I can adapt the use of the technologies that I am learning about to different teaching activities	A	D
I can choose technologies that enhance the content for a lesson.	A	D

Note. SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

Mort reported a number of changes in his perceived ability to use and integrate technology in teaching. The results of his survey could be interpreted as a drop in knowledge as a result of the course or a change in the way he thought about his own skills and abilities in relation to the general use of technology in teaching. In order to further understand Mort's experiences, I analyzed data from all of Mort's artifacts, including his pre-course and post-course interviews, his five lesson design plans and cover pages, and his final course reflection. When analyzing the statements, the themes

of Personal Foundation (PF), Learning (L), and Teaching (T) emerged. Additionally, Mort focused on the theme of Engagement (E).

Personal Foundation. Mort's personal foundations emerged as a strong indicator of where his general attitudes and beliefs about technology originated. These personal foundations are an expression of the participant's personal expressions about technology and its uses in teaching and learning. Mort only expressed his personal foundations during the pre-course interview, but provide insight into how Mort understands technology and its uses in teaching.

Mort's initial instinct when asked about technology was to, "start off with the iPhone, because I get messages from family and friends, Internet...some emails or whatever, and then later on in the day phone calls, so that kind of technology." Mort relied on his phone, indicating it was a technology that he couldn't do without, because "you never know when the kids are gonna call you and it's nice to be able to keep in touch."

This positive attitude about communication is not just relegated to Mort's personal life, but also his previous career as a Marine Corps field sponsor. He noted that, "for them to be able to say 'I contacted OcField sponsor and this is where we're going, this is what we're doing, here's the plan', it makes them feel satisfied and assured of what's going on, especially when they're deployed in Iraq or Afghanistan." His own experiences reflected this positive attitude about communication technology, which he explained as he reflected on one of his deployments to the Middle East.

being in Iraq and take a picture on my phone and shoot it across the world that

quick [snaps fingers] and have my boss in the states realize "oh, this is what he's

talking about, this is what we need to do, ok, go ahead, here's whatever you need

as far as resources, go get it done because now I can see what is going on over

there," that just amazes me. We never had that before, even when I was growing

up young in the Corps, we never had that kind of stuff, so that's really got me

going into technology and why.

Mort saw this evolution in technology and experienced it firsthand, because "when I

joined the Corps it was '82, so we didn't have computers per se. We had one for a whole

battalion of 1,000 Marines basically."

While Mort had a positive attitude about the practical application of technology

for Marines, he also recognized the importance of using technology thoughtfully in the

classroom. When reflecting on his experiences in High School from more than 35 years

prior, he remembered that, "it was all memorization and then tests and then forget.

Where now its…you just have to know where to get that information because we all have

a phone…and use that and further our education to learn different things." From the start

of the course, Mort believed in using technology to support instruction in the classroom

and had a positive attitude about technology's use in schools.

Learning. Learning is defined as the participant's expression of his beliefs in

relation to his own learning and the learning of students in the classroom when using

technology during lessons. Mort's understanding of learning was expressed through his

comparisons of his experiences as a learner, both in high school and his undergraduate

program, with what he saw from students during his observations of classroom instruction.

Mort's open and excited attitudes and beliefs about technology were easy to spot, as he noted, "I am from the older generation, and a lot of people from my generation don't easily adapt to new things that come along. I just make it a point to try to learn at least everything I can." As a future teacher, he recognized his own limitations in connecting with his students. In order to communicate with this younger generation, he explained that "they all start off with cell phones before they get to high school and they're using technology every day..., so I think it's important for teachers to be more up to date or as up to date as their students." His motivation to learn technology was not only for himself, but also so that he could reach his future students. He recognized that, "kids are learning at the speed of light, we need to be up to that as teachers."

Reflecting on his experiences in high school, Mort remembered that he "wanted to learn about new stuff too. I was a kid so all kids wanna learn new stuff." He voluntarily took a number of typing and technology courses in high school, trying to expand his understanding of various new tools. However, what amazed Mort now is that students today are "already using Blackboard and Google Docs in high school, because of course Blackboard I didn't learn until I got here and that was two years ago." Mort not only recognized students' ability to use technology tools, but also how those tools could help in learning, identifying that "we don't' have to spend time memorizing [information] so much that we can move on to learn deeper things."

By the end of the course, Mort had moved beyond comparing his learning

experiences with that of students in his observation classrooms. He still retained his

positive beliefs about student learning with technology, identifying in his course

reflection that "students are already comfortable using computers and the Internet and

jump at the chance to use new technologies in education." The experiences in EDIT 504

helped Mort bridge the gap between his own learning and his future teaching, recognizing

that "keeping up with technology will help develop lessons and provide engaging lessons

for students."

Teaching. Mort also noted how important technology was for teachers and the

teaching process, drawing a number of comparisons between his experiences in the

Marine's and his future classroom. This theme evolved for Mort, as he moved beyond

comparing his experiences to thinking about what he needed to do as a future teacher to

be prepared to meet his students' needs.

Mort's experience of integrated technology in schools revolved around the use of

the overhead projector and the chalkboard for direct instruction. This lack of experience

of integrating technology afforded Mort the opportunity to observe teachers with open

eyes, as he noted many unique benefits to teachers using technology to support classroom

instruction.

> They had interactive software, they were using Blackboard, they're using Google
>
> Docs to send to the teacher, and she was sending back, ya know, grades and
>
> evaluations of what they were doing, which I thought was fantastic because its
>
> instant access to how the students are doing, and one of the things I noticed is

they were able to maybe change the lesson plan a little bit to bump it about

what the students were lacking, which I think is a real big plus.

Mort was able to observe the teaching process without preconceived notions of what

technology integration should look like, which allowed him to observe the positive

influence technology could have in classroom instruction.

Observation wasn't the only activity that shaped Mort's general attitudes and

beliefs, he also drew comparisons between teaching and his own career in the Marine

Corps. When reflecting about the use of technology in the classroom, Mort noted that,

"she or he, the teacher, can see what the kids need then she can focus that on them instead

of messing around, wasting time, because there isn't any time to waste in schools these

days." As a Marine, Mort recalled that it was the "same kind of philosophy I had when

taking care of Marines when they're deployed and they shot me an email. It didn't matter

if it was two o'clock in the morning, I'd go ahead and answer them." Whether playing

the role of personal mentor or teacher, Mort believed that technology can be used to

eliminate wasted time and support the people for which he was responsible.

By the end of the course, Mort didn't focus on teachers using technology to

support instruction, but rather what teachers needed to do so that they were able to use

technology to support instruction. He noted in the post-course interview that "I always

thought we should use technology, but now...teachers really need to get involved with

technology so that they can be able to use it...because a lot of [students] are already

ready." He believed that there is a responsibility on the teacher to learn the tools and how

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to integrate technology, but he also understood that "the challenging part is finding the time."

   Engagement.   A fourth theme that emerged during open-coding related to excitement and the desire to use technology. This theme was unique from Authentic Application because it did not relate to the use of technology to solve any problems. Rather, it focused on the ability of technology tools to attract attention and encourage participation from its users.

   Growing up in a time when computers were a newly available tool, Mort's introduction to technology revolved around understanding and using single tools. This use of tools was not in relation to solving problems or understanding their application in relation to other concepts, but was a series of courses designed to teach the specifics of a single tool in isolation. Mort signed up for a number of classes, including a typing class and a card reader class, because "computers were...the word was so new back then...I remember my dad getting his first computer." Growing up, Mort was simply engaged by the existence of the tool, noting "that's what I used to do was take radios apart when I was in high school and see how they're made."

   Mort still reflects on the importance of engagement as it related to classroom instruction, recalling his own experiences in the classroom without technology.

   Of course we didn't have computers when I went to high school, but the lesson

   plan would be X and some of the kids would be right on it and eat that, but

   whereas the other ones, like me, would be bored. We would start playing games

and then we'd get in trouble, ya know, because we're causing a commotion

because we're bored with the lesson because we're already above that.

Mort noted his lack of engagement and made a connection between his experiences as a

student and what he observed in classrooms when teachers integrated technology,

identifying that "the teacher can see what the kids need then she can focus that on them

instead of messing around."

Mort used his own experiences, such as seeing students engaged in tools like

Google Docs and Blackboard, and the experiences of the EDIT 504 to develop a belief

that "keeping up with technology will help develop lessons and provide engaging lessons

for students." He recognized that students "are already comfortable using computers and

the Internet and jump at the chance to use new technologies." Mort believed in the

ability of technology to engage students and keep their attention focused on the learning

environment.

Attitudes and beliefs about technology in support of social studies learning.

The M-TPCK survey provided the participant's perception of his understanding of social

studies teaching methods and the role that technology plays in supporting those methods.

Only one statement remained unchanged after EDIT 504. The other eight statements all

dropped upon completion of the course, with six of the eight statements dropping by two

points from agree to disagree or neutral to strongly disagree. The results of Mort's survey

are summarized in Table 5.

Table 5

Mort's Results on Pre-Course and Post-Course M-TPCK Survey Social Studies TPCK

M-TPCK Statement	Pre-Course	Post-Course
I have sufficient knowledge about social studies.	A	N
I can use a historical way of thinking.	A	N
I have various ways and strategies of developing my understanding of social studies.	A	D
I can select effective teaching approaches to guide student thinking and learning in social studies.	N	SD
I know about technologies that I can use for understanding and doing social studies.	N	SD
I am thinking critically about how to use technology in my classroom.	N	N
I can teach lessons that appropriately combine social studies, technologies, and teaching approaches.	A	D
I can select technologies to use in my classroom that enhance what I teach, how I teach, and what students learn.	A	D
I can use strategies that combine content, technologies, and teaching approaches that I learned about in my coursework in my classroom.	A	D

Note. SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

The results of Mort's survey indicated that he initially perceived his abilities to use historical thinking skills in the social studies classroom to be very strong. However, upon completion of EDIT 504, the results of the participant's survey indicated that he no longer had the same level of confidence he had prior to the course. Four major themes emerged from Mort's data analysis. Those themes were Technology and Preparation/Planning (TPP), Technology and Student Engagement (TSE), Technology

and Student Outcomes (TSO), and a new theme, Technology and Teacher Engagement (TTE).

     Technology and preparation/planning. Due to his experiences and personal foundations in tool comprehension, Mort's expression of this theme emerged as a result of his desire to find specific tools to use in the classroom. While Mort expressed his interest in finding specific tools for the classroom, by the completion of EDIT 504, he showed an indication of selecting tools to support student engagement, but these indications were small in sample size.

     Mort's motivation prior to the start of EDIT 504 was ensuring that he could "find the right software that's gonna keep the kids' attention, that's going to keep them motivated to learn." What motivated Mort in preparing to integrate technology in social studies instruction was based on specific tools and how students would use those tools. His focus was not on what the students would do with those tools, instead choosing to stress whether the tool was engaging or not. As a future teacher, Mort also believed in the need to learn those tools, noting that, "I want to know everything I can about technology and what they're using and we can't use...I want to be able to use it if I do get a chance to have it in random teaching." Mort's attitude about technology in the social studies classroom indicated that he wasn't interested in what the tool does or what it affords, merely that if it exists and is available, he wanted to use that tool. This expressed belief by the participant certainly indicated a high level of excitement and a positive outlook about the role technology played in the social studies classroom.

In his course reflection, Mort continued to indicate the need for technology to support students' learning. However, this time it was not based on whether the tool would keep students engaged, but how it would support their learning, identifying that "Technology can be used at home for those students who are medically absent from school for extended periods." Additionally, he noted a developing recognition of the use of affordances in supporting complex thinking skills, writing "I will keep efficiency, effectiveness, and engagement in mind to provide authentic teaching using technology."

From the very beginning, Mort expressed positive beliefs about the use of technology in the social studies classroom, but by the end of the course, he indicated how he was wrestling with the new concepts introduced in EDIT 504, stating "Well I always thought it should be used but now I know how to use it...how using it benefits student learning." Understanding this benefit influenced the way he approached planning and preparation of social studies lessons, recognizing that "students are shy at first, but that's what I love about technology, you could have the shy students put stuff on the computer or submit it and they're not that shy when writing on the computer." Despite his blossoming thinking on using technology to support preparation and planning for social studies instruction, Mort's thoughts appeared to be vague at best by the end of the course, falling back on the appreciation for what a tool does, rather than what could be done with those affordances, stating "it's just amazing how we can look at just so much information at one time because we have computers and technology."

Technology and student engagement. The second theme that emerged focused on how the teacher's preparation and planning turned into students engaging with

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technology during the lesson. In this case, the participant expressed how various

technology tools could be used in a static model of instruction that the preservice teacher

learner was comfortable with and expressed a developing understanding of the role

technology could play in supporting student learning.

Prior to the start of EDIT 504, Mort relayed an experience he had while observing

a classroom teacher during the pre-course interview.

The one class I sat behind one of them, it uses an interactive software with World

War II, things that were going on at that time for history, which I thought was

really interesting, really the kids got a lot out of it, the instructor, not only did they

use the interactive software to figure out the 14 principles of Woodrow Wilson,

but also they picked one of those principles and then the teacher had them make a

poster and promote that principal and then they actually had to get up in front of

the class and present their principal on why it was so important, so it not only

engaged them with different parts of their mind, but it taught them about the 14

principles, and then for them to have to speak as well

Mort expressed a high level of excitement and energy as he relayed this story and

displayed an extremely positive belief in the role technology could play in engaging

students in social studies content. This experience heavily influenced the participants'

perspective on how to design lesson plans and integrate technology to engage students.

In his first lesson plan, Mort designed a lesson where students were constructing

an art history timeline of ancient civilizations, and required students to access "computers

and the Internet in order to research information and design a timeline. They are then

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required to present their ideas to the class." Mort used the model from his example in the pre-course interview where technology supported an activity followed by a presentation. This model appeared in every single lesson, including his fourth lesson plan where he asked student to research various genocides throughout history which concluded with students creating "a poster to use to inform the class on facts about the past." The participant relied on an instructional model that afforded him the opportunity to practice using technology to support student engagement, designing a lesson where students developed a budget and used a road trip design tool to plan a vacation in his third lesson plan and a learning management system and database to develop an argument in support of or opposition to the 17th amendment in his fifth lesson plan.

It became apparent that Mort used the model of instruction he was comfortable with so that he could focus on successfully integrating technology into his lessons, reflecting that "I learned that adding technology into lesson plans help students become more engaged and will increase their knowledge if planned correctly." Mort reinforced what he saw in his observations, that "students demonstrate active learning when using technology, especially new technology."

During the post-course reflection, Mort noted that, "students already come to the classroom they are comfortable using the web, they want to learn in school more like they learn on their own." For Mort, this meant using technology to create an active learning environment where students are engaged. Not only did he stress the importance of technology in creating an environment of "active learning because they're doing

something and not just sitting there with someone lecturing," but he also believed that the key to successful student engagement "is to make sure that the technology is easy to use."

Technology and student outcomes. Another theme that emerged in Mort's artifacts was the student outcomes that emerged when teaching social studies lessons that integrated technology tools to support instruction. While Mort did not express his thoughts about how the integration of a tool to support historical thinking leads to an expression of student learning, he showed awareness that the integration of a technology tool and the engagement of students in the learning process led to some tangible outcome.

During the pre-course interview, Mort reflected on the importance of physical outcomes in the learning process.

> How many times do you get to speak? I don't think I spoke at all in high school. So for them to have to do that and just that one section they were learning, so you know, they're doing a dozen sections all year long and each one they're up a dozen times in that one year of school, I think that's fantastic. So I think that's what we have to do, give them those opportunities.

Mort expressed a belief that students needed to be given the opportunity to display what they've learned.

Throughout his lesson plans, Mort noted the importance for students to create or present a display of their knowledge. In three of his lesson plans, Mort wrote "Students will then prepare a presentation to give to the class," which indicated a strong belief in the need for students to prove what they have done. He had students use technology to create these outcomes, asking students to "design an easy to read poster on the Easel.ly

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website" to explain the various genocides that students were researching in his fourth lesson plan. While Mort did not draw specific connections between the use of technology and engaging students in complex thinking skills, the foundation of his evolving thinking was evident throughout his lessons. In his first lesson plan he required students to "use Google Docs to create a timeline with photographs of the artifacts you selected. Place the items where you feel are the most appropriate and describe your selection."

By the end of EDIT 504, Mort expressed his understanding of how student outcomes could be represented through technology to express what complex thinking skills students developed while learning social studies content.

> I go back to that one, Roadtrippers, because not only were the students learning about history, and it wasn't much, because they just had to pick a couple sites, but they also learn about their budget and being able to live on a budget, and I think that is just so much more important than anything we could teach them right now and they aren't learning that and I didn't learn that when I was in school.

The participant reinforced a positive attitude about the role technology played in enabling deeper thinking about history and historical thinking skills as he reflected on the fourth design experience, where he was asked to develop a briefing paper on whether or not dropping the atomic bomb was a reasonable and acceptable action.

> So looking at the research and then using all your other skills as well, you know, what the Japanese were thinking, what the Americans were thinking, what the soldiers were thinking, what the devastation the Japanese went through and the

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families and the kids, and the little tricycle picture that we saw there, and things

like that...but then weighed against President Truman and what he was going

through and his General's telling him 'we're gonna lose another million soldiers'

fighting the way we're doing...it gives you a broader perspective I think.

Mort's overall attitudes and beliefs about using technology in support of social

studies instruction were open and positive, reflecting that "you can use that and adapt it to

whatever you are teaching, so the students can learn those concepts."

Technology and teacher engagement. The final theme that emerged through

Mort's artifacts was the role that technology played in engaging the teacher in the

learning process. While many of Mort's reflections focused on what students could do,

this theme was unique in that it focused on the role that technology played in affording

teachers the opportunity to support student learning.

Mort initially expressed an attitude of excitement at the thought of using the,

"interactive blackboard, Google docs, be able to answer the kids questions at the touch of

a button or computer screen or even my phone, ya know, while on a website." Mort

believed that his classroom could be a space where "the kids [are] working on their own

or in groups or both and then me directing the class and having them go on different

tangents or their own and me trying to reign them in and keep them learning…." He was

excited at the opportunity to be the supportive teacher that used technology to engage

with his students.

I just think that's so important to keep in touch, to be that person, to be that

teacher, that's gonna go ahead and ya know, the student has an issue with XYZ or

whatever and they can send it out there electronically, you can answer it and give

it back to them in minutes, then the kid doesn't have to worry about that and they

can move on to other things, where it might stress them out while they're worried

and then they're not learning anything while they're stressing out.

Mort's attitude about teacher engagement was expressed in his lesson plans,

where he wrote in four of his five lesson plans "be prepared to answer questions from the

teacher." He believed that a teacher's engagement was essential in the social studies

learning environment, and stressed that importance when reflecting on his time observing

a physics classroom, stating that "social studies teachers have to be a little more creative

than physics teachers in order to use that technology and be active, but you can be

active."

Ability to design technology integrated lessons to teach social studies. Data

from Mort's artifacts were decontextualized based on their relation to how the participant

reported changes in their perceived ability to design lessons that integrated technology to

support complex thinking skills that enabled students to solve authentic problems.

The first source of data was the rubrics for Mort's five lesson plans created in

EDIT 504. Throughout each lesson plan, Mort struggled to identify how students would

use historical thinking skills and the affordances of various tools to solve a complex

problem. When identifying the historical thinking skill that would be used, Mort was

challenged when asked to identify how the students would engage with the skill. As a

result, his explanations through the first four lesson plans were unsupported or missing

entirely. Additionally, after initial success in developing a solid authentic problem, Mort

struggled through the final four lesson plans to create a cohesive authentic problem that framed the lesson for students. Despite these struggles, Mort was very skilled at describing the affordances of the tools chosen and how they would be used to support student learning. While Mort struggled designing lessons, he showed significant and continuous improvement throughout the course. The results of his lesson designs are summarized in Figure 4.
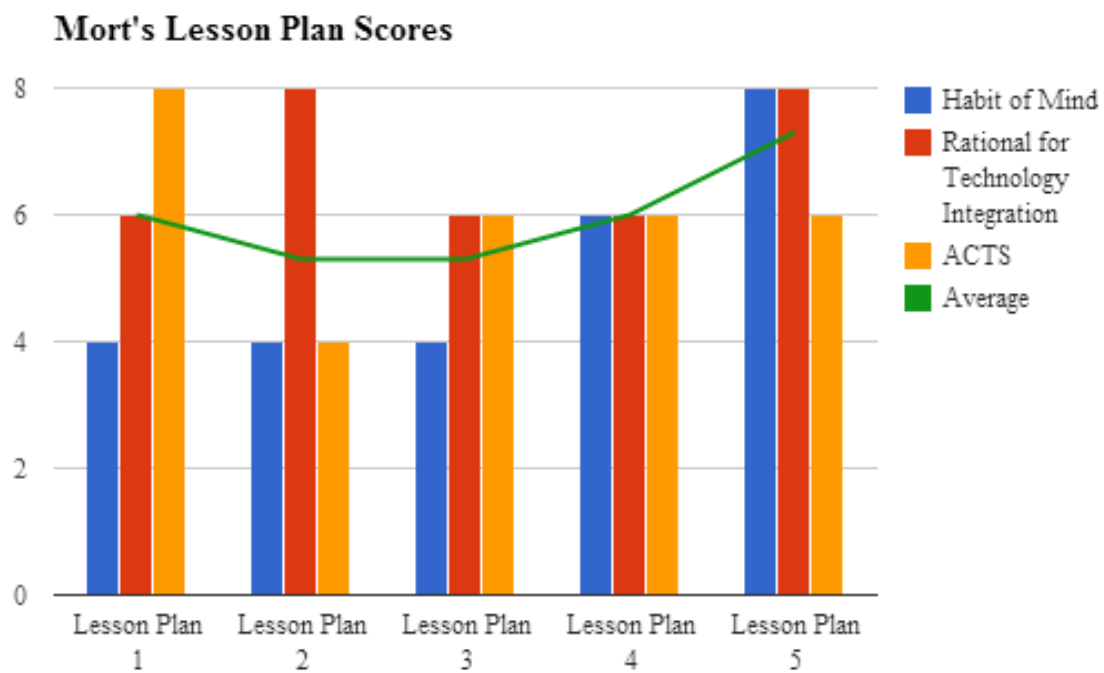
Figure 4. Mort's Lesson Plan Scores and Averages

In addition to the lesson plans, data was pulled from Mort's interviews and surveys as well as his lesson reflections. Once decontextualized, four themes emerged from the data. These themes were Social Studies Goals (SSG), Authentic Thinking Skills (ATS), Technology Use (TU), and a new theme, Confidence (CON).

Social studies goals. Social studies goals related to the teachers expressed interested in designing lessons that achieved both overt goals, or the objectives required in a standards-based curriculum, and covert goals, the thinking skills and conceptual ideas that the teacher wanted students to be able to engage in during and after the lesson. Having no previous lesson design or classroom experience, Mort relied on short, simple descriptions that mixed overt and covert goals together.

In the first lesson plan, Mort created an activity where students were to develop a timeline of artifacts about early river valley civilizations for a museum exhibit. He described his goals as engaging "the students in thinking about river valley civilizations chronologically." His initial abilities were limited by his lack of content knowledge of the subject as well as his understanding of separating these ideas which culminated in a list of requirements for students' final work as "Your design will need to highlight religious traditions that describe origins, beliefs, traditions, customs, and the spread of Judaism." Unfortunately, this is the SOL standard verbatim, and indicated that Mort was challenged in developing these goals explicitly.

By his fifth lesson plan, Mort showed some signs of improvement, but still struggled with clarifying his lesson goals and what those goals actually meant for the students. In a lesson where students were to research and debate the necessity of the 17th

Amendment, Mort wrote that "My goal is to teach about historical issue-analysis and decision-making by researching the progress of the 17th amendment and relevancy today." Just like in the first lesson plan, Mort struggled with identifying how the terminology used to describe historical thinking was turned into instructional goals.

In the post-course interview, Mort displayed a continuous struggle understanding and identifying his goals, stating, "You know, all we had was dates, names, places, events, period. You know there was no technology in the course. Umm...uh...now I...now I actually think about the design and how it's going to act with students." Mort had difficulty in identifying concrete goals because of his struggle in identifying authentic problems in which to frame the social studies content.

> I was like 'oh, just do the 17th' and students could look at how it was brought into
> being in the first place and all of the debate and then how now it is being debated
> as well. And then it brings it right to today, its authentic, and then I was like ok,
> lets go! And it really fell into place

His struggle in developing an authentic problem limited his ability to identify concrete goals, both overt and covert, that students would be working about in the lesson. Despite this continuous struggle for Mort, he remained positive about his experiences and recognized that when identifying his goals "that maybe its teaching students to look at things from different angles now, and I thought those concepts helped and they not only help social studies but they help other courses."

Authentic thinking skills. The second theme related to Mort's ability to design lessons revolved around his explicit statements about how students will engage in

historical thinking skills to solve problems. The data from this theme emerged entirely from lesson plans and the post-course interview.

As with identifying social studies goals, Mort continuously struggled with developing an explanation of how he designed lessons that incorporated thinking skills to solve the complex problems faced by practitioners. In his second lesson, he tasked students with identifying leaders of the American Revolution, explaining that their authentic problem asked them to become the teacher "researching and presenting information about these leaders and events chronologically," which would "require them to learn and comprehend the material." The lack of a real problem faced by practitioners continued to plague Mort into his final lesson plan, however he did show growth when students were asked to "decide if they support or oppose the 17th Amendment today and write a newspaper article trying to convince the public of their points of view."

In addition to crafting an authentic problem, Mort also struggled with developing a concrete connection to historical thinking skills, explaining that students, in his second lesson plan, were "required to think chronologically, understand historical comprehension, provide historical analysis and interpretation, and conduct historical research and analysis." While this is a list of terms learned in the course, there was no explanation by Mort that indicated he understood how these terms were connected to practice. By the final lesson plan, Mort showed improvement in drawing these connections, explaining that "students are going to use Historical issue-analysis and decision-making to look at the issue and decide which side of the debate they support. They will then write a newspaper opinion piece to convince readers of their position."

Mort explained how he struggled during the post-course interview, noting that its "not more of a 'what technology do we have to use', its more 'what do we have to teach to be authentic for them'...a little different way of looking at things than I thought of at the beginning." As a developing teacher, Mort struggled with a lack of classroom perspective, relying on "doing the lesson while designing [since it] helps understand what students will experience." By the final lesson plan, the participant indicated his growing abilities and attempted to think about how historical thinking skills could work to support authentic learning in the classroom since "it now gives me a place to go to say 'ok, how am I gonna design this lesson plan so it's gonna work, am I gonna incorporate ACTS and all my historical thinking at the same time."

Technology Use. The third theme that emerged in Mort's data was identifying the way in which he integrated technology into his lesson plans. This theme was not measured by how Mort used technology, but how he recognized the affordances of various tools and used them to support the complex thinking and learning of his students in his various lesson plans.

While Mort embraced the idea of affordance-based design, which attempted to utilize the specific features of a tool to support complex thinking and learning in his lesson designs, his thinking culminated in his lesson plans where he wrote that "I used the affordances of computers, Internet access, and a web-based timeline." A variation of this statement appeared in all of Mort's lesson plans, indicating that he struggled with identifying the way a specific tool could be used to support thinking skills in the classroom.

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In the post-course interview, Mort indicated that he still relied on understanding a specific tool and using the tool rather than developing an understanding of the tools various affordances for supporting thinking.

I guess it broadened my perspective on uses of technology to teach with...ummm..it gave me a whole list of resources, like the spreadsheet we started that we can use, to go through the technology and say "oh, this would work", and it would reinforce this part of ACTS, and how it would reinforce.

Even though Mort relied on tool comprehension as a way of integrating technology rather than understanding the tool's affordances and using those affordances to support thinking, he still indicated a growing ability to design lessons.

Well, it's difficult every time, but its...it's not impossible now [laughter]...whereas before I wouldn't know what to do, where to look first, and now I'm looking at alright, what do we have to teach, and how can we teach this in an authentic way using technology, if we can use technology to do it.

Confidence. The final theme that emerged in Mort's data was the concept of confidence in his abilities to design lesson plans where technology was integrated to support complex thinking skills in the pursuit of solving real-world problems. This concept of confidence was expressed in the participant's pre-course and post-course interviews as well as one very important statement from his course reflection.

As a career Marine, Mort had multiple opportunities to develop lessons in which he taught conceptual ideas to younger Marines.

Speaking about martial arts, you can throw a guy 100 ways, but you gotta teach

the kids, and I say kids because they're all really young, the average age of the

Corps is 19, but you can teach them and show them different things and

sometimes they don't get it, so you got to be able to adapt your instruction so they

understand and after a while it became pretty easy and didn't have any problems.

you have to plan all that out, if you don't plan it, it's a bad lesson.

However, he did not perceive these to be formal teaching and learning

opportunities, instead thinking that these experiences were not actual training on how to

instruct or design lessons.

I never had any training on teaching, I should have, after what I've learned in

these classes already I'm like "wow", like learning that people learn differently, I

did learn just by doing it, but I think that would have been more advanced had I

known this kind of stuff ahead of time.

Despite this lack of confidence in his own abilities, by the end of the course Mort

reflected that, "I now feel confident that I can write a technology integrated lesson plan

and use it in future classrooms." As a Marine, he showed his fellow service members

skills and abilities, but still felt that "I didn't write any lesson plans before this course."

In his post-course interview, he mentioned on multiple occasions how "I didn't know

how to write a lesson plan when I started and now I know how to write a lesson plan and

I'm comfortable using technology to write one." Mort expressed a lack of confidence in

his lesson design skills because he felt that he had never created any lessons. By giving

him the opportunity to practice formal lesson design, he expressed an ability to design

lessons and a confidence designing successful lessons.

> When I got to the last one, I'll be honest with you, I saw those SOLs and I was
>
> like 'how the heck am I gonna incorporate all these', and I really had no clue at
>
> first, and I think you sent me the email and it was one word in that email and I
>
> was like 'Oh, Oh yeah!'

Impact of course design on participant learning. In addition to reflecting on

their understanding of course content, participants were asked to reflect on the course as a

whole. Mort's post-course interview and course reflection contained a few important

points about how the structure and content of the course influenced his learning. The

three themes that emerged were Course Design (CD), Teaching Content (TC), and

Learning Activities (LA).

Course Design. As a major theme, course design emerged as a result of how

Mort expressed his feelings over the arrangement of course material and how it supported

his ability to handle the new and complex information.

Mort expressed extremely positive feedback about the design of the course, noting

that "the organization of the course was outstanding in the way we started with the basics

of teaching and then integrated technology." He found the design to support his style of

learning which afforded him the ability to turn "back to my notes at the beginning [of the

course] to keep lessons authentic, effective, efficient, engaging, and personalized."

In addition to the slow pace at the beginning, Mort felt supported and challenged

and said that "it started me thinking about history and thinking about teaching

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history...how do I teach without just giving students dates which is the way I was taught?" As he struggled with this challenge, he relayed that the design of the course assisted him with this issue, "Not only in the examples and the experience that we each did on those five modules but also the design of each of those lesson plans...it worked to help reinforce those concepts."

Finally, Mort was glad the course structure afforded him the opportunity to "do it anytime, anywhere. Most of it was right here so it gave me flexibility." He highlighted that "I think this course is good online because of the use of technology, so you're using technology to do the course."

Teaching Content. The second theme that emerged from Mort's post-course reflection and interview focused on the content of the course. Due to his limited progress in the graduate program, Mort did not have a lot of experiences with which to compare the teaching content of EDIT 504. His reflections were focused more on overall understanding of concepts from the course and how he perceived their effectiveness for his future teaching.

As a new student in the education program, Mort felt that this experience "was a truly incredible course that has helped me to shape and sharpen my teaching skills. I think it should be required for all future teachers in America." He felt that "the course has developed my use of technologies and a desire to seek out more and newer technologies to use in the classroom." Additionally, he noted that, "I am more excited about pedagogy because of the way this course has engaged me in learning and teaching."

When asked about the course in the post-course interview, he identified the importance of wanting to know "how to use technology and write lesson plans, and this gave me both. Writing lesson plans...the basics of writing lesson plans and using technology incorporated into those lesson plans." Finally, Mort concluded his analysis of the course with "this course taught me more than I knew you could teach me."

Learning Activities. The final theme that emerged from Mort's analysis of his experiences in the course was the learning activities that he completed. These activities included the readings, discussions, experiences, examples, and lesson plans.

Mort struggled with a number of activities in EDIT 504. Many of his issues revolved around the length of assignments and the speed at which he could complete them. He felt that "shorter readings were better because you were able to get the concept out without getting too involved in the readings...those [longer readings] really got me side tracked." He noted that by not finishing these readings, it limited his ability to successfully participate in the course discussions, saying that "I was a little bit slow reading and doing the discussion answers because I wasn't really sure about some of the points."

Despite his struggles with the readings and discussions, Mort enjoyed the design experiences "because it focused you as a student to think about what the student was learning during that particular lesson...so that helped you to use those learning aspects to write your design in the next week." Mort was particularly thankful for having the opportunity to design five different lesson plans, because "that was the thing that put it all together, designing lesson plans."

Summary. Mort had a positive experience in EDIT 504, as he developed a complex understanding of the role that technology played in developing authentic lesson designs that challenged students to engage in historical thinking skills. His strong personal foundations and beliefs in the positive role technology could play in instruction enabled him to develop an engaging attitude about technology's use in schools. However, his limited experience with classroom instruction challenged Mort to engage with content and skills that he had never been asked to use before. As a result, he struggled when applying course content into lesson design. Despite this struggle, he developed a new-found confidence in crafting lesson designs that indicated a developing understanding of how technology could be used to support complex thinking in the social studies classroom.

Case Study 3

Biography. Case Study 3 followed Carolyn on her journey through EDIT 504. Carolyn was a 23 year-old graduate student who worked for alumni relations at the same university where EDIT 504 was offered. While her original undergraduate program was graphic design, she found that she lacked the drawing capabilities necessary to be successful in the program, and instead decided to pursue a career in teaching. Based on her age, Carolyn was a digital native, exposed to digital technology at a young age and surrounded by it in school. She was working on completing her coursework in the Master's program and started her teaching internship in the Fall of 2014. She explained that she took EDIT 504 as a last minute option to be considered a full-time student and

enjoyed her work with the university, noting that it was nice to have a teaching certification to fall back on if necessary.

   General attitudes and beliefs about technology in teaching. As a participant in the study, Carolyn was asked to complete the M-TPCK Survey at the beginning of the course and immediately after it concluded. She was sent three reminders about the survey after the course, but she unfortunately never completed the post-course survey. As a result, there is no way to examine the results of the M-TPCK Survey as an introduction to her expressed experiences through her interviews and EDIT 504 coursework. Carolyn completed the pre-course survey and indicated that she felt she had an average attitude about technology in general, only marking that she believed her ability to solve technical problems and knowledge of various technologies were particularly low. She also expressed that her ability to choose various tools to enhance content for lessons was above average. The results of her pre-course survey are summarized in Table 6.

Table 6

Carolyn's Results on Pre-Course and Post-Course M-TPCK Survey General TPCK

M-TPCK Statement	Pre-Course	Post-Course
I know how to solve my own technical problems.	D	N/A
I can learn technology easily.	N	N/A
I keep up with important new technologies.	N	N/A
I frequently play around with the technology.	N	N/A
I know about a lot of different technologies.	D	N/A
I have the technical skills I need to use technology.	N	N/A
I have had sufficient opportunities to work with different technologies.	N	N/A
I can choose technologies that enhance the teaching approaches for a lesson.	N	N/A
I can choose technologies that enhance students' learning for a lesson.	N	N/A
My teacher education program has caused me to think more deeply about how technology could influence the teaching approaches I use in my classroom.	N	N/A
I can adapt the use of the technologies that I am learning about to different teaching activities	N	N/A
I can choose technologies that enhance the content for a lesson.	A	N/A

Note. SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

With no results to compare, it became essential to use Carolyn's coursework, pre-course and post-course interviews, and post-course reflection to develop an understanding of her journey through EDIT 504. These artifacts became a reflection of her experiences which developed an understanding of her story. After reading through all of her data, four major themes emerged. Those themes were Personal Foundation (PF), Learning (L), Teaching (T), and Overall Negative (ON), a theme unique to Carolyn.

Personal foundation. Personal foundation was a theme that emerged as an expression of who Carolyn was at the beginning of the course. It was an indication of how Carolyn understood technology, how she used technology, and how her attitudes and beliefs impacted her use of those tools. This theme only emerged during the pre-course interview, but helped to understand where her journey began.

Carolyn's interaction with technology in schools was unique. As a member of a public school academy, she was a student who received a laptop for all four years of her high school education which enabled her to use it in all of her classes as part of an academy-wide initiative to support student learning. She remembered that "there had been enough proven success of [the academy] that they received state grant money and the coordinator pretty much threw it all into technology, so all of our classrooms got laptop carts." While in this program, Carolyn developed a strong understanding of specific tools that were used, explaining that "anything more technical than just your basic Microsoft package is a little more advanced than what I'm used to." This statement by Carolyn indicated that she recognized and responded to a tool, and not to its uses or affordances.

In her personal life, Carolyn worried about the rapid growth of technology, because "it's how we function, unfortunately...for the most...fortunately and unfortunately." She expressed in her pre-course interview that "[technology's] brought a lot of great things...umm...but at the same time, how many of us are glued to our cell phones 24/7?" While technology has afforded her the ability to contact her friend in Italy, with "Skype, I can call, and its...no big deal...20 years ago it was not feasible."

However, she expressed concern "for the older generations there's nothing worse than the new technological era."

   Learning. As a theme that emerged from Carolyn's data, learning was her expression of her general attitudes and beliefs about technology's use to support learning. She briefly touched on technology's ability to impact learning and most of these reflections appeared during her pre-course interview.

   Prior to the start of the course, Carolyn was exposed to technology in the learning environment. She recalled that in "elementary school I can remember ummm...we were lucky if classrooms had student computers. The teacher had theirs and different ones for student use. There would be a maximum of one or two in the classroom." While Carolyn didn't perceive this exposure as beneficial, she did have the ability to recall seeing technology in the classroom available to students, but did not express any memory of using these tools. In addition to the classroom tools, Carolyn remembered when the school began a live broadcast of morning announcements "so rather than just come over the PA system, they broadcast it all over the TVs and it was huge."

   As a high school student, Carolyn had the benefit of technology in every classroom. Additionally, students throughout her school benefited because "once we got the laptop carts there were still all these labs that students had access to, the library had tons of computers." While she indicated a potential positive outlook to the exposure to technology, Carolyn followed this statement with an indication that the exposure to technology didn't impact learning, noting that "Our advantage was more so the academics." She remembered that the use of technology was to do, "a lot of research,

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especially in our English classes." Additionally, "there was a lot less of going to the library and grabbing a book and definitely more dependence on databases, finding electronic sources." Carolyn expressed an attitude that indicated the technology wasn't necessary or overtly useful in the learning process.

By the end of EDIT 504, Carolyn expressed a change in her attitudes, noting in her course reflection that "I learned that by learning through technology, the students of today have more access to materials and sources than any previous generation before them." She added in her post-course interview that "I realize there's more tech…there's more software and resources available to teachers and students in the classroom than what I had prior knowledge of." However, this shift in attitude didn't appear to be a large change, as her expressions were vague and lacked a sense of concrete understanding of specifics.

Teaching. The third theme that emerged from Carolyn's data was her expression of technology's impact on teaching and how it affected the teaching process. For Carolyn, this theme emerged as a resistance about the use of technology in the classroom for the teacher and evolved into how teachers could control technology in their classroom.

Prior to EDIT 504, Carolyn expressed concern over technology's use by teachers and embraced traditional teaching models, stating "I think it's, I think it's a blessing and a curse. I think it would be a great secondary but not, I don't think it should replace the standard reading book or looking through an ABC book. And just...old school teaching basically." Carolyn's attitudes about the use of technology in schools appeared to be

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influenced by her exposure in her high school program, where "it was so very much in its infancy so, for the older teachers, it was just a matter of figuring out what to do with it. For the younger teachers, I feel it's hard to say, I really don't remember...the difference." Carolyn indicated that her confused experience with technology in her high school program impacted her attitudes and beliefs about the use of technology in schools.

By the end of EDIT 504, her perspective shifted from outright hesitation or resistance to an examination of how technology could be controlled by the teacher. In her course reflection, she noted that "by utilizing technology in the classrooms, teachers give students the ability to prove themselves on a more computer driven level." She expressed her attitude about technology as the teacher gave students the access to technology, which indicated that it was something to be controlled. Additionally, Carolyn hinted at her belief that teachers disseminate information through the technology they control, "utilizing video software, it was just more a matter of there's more out there to be able to umm....highlight."

Overall Negative. The final theme that influenced the participant's attitudes and beliefs about technology in schools was a combination of the previous themes. As Carolyn talked about technology and what she believed the role of it was, she maintained negative attitude about technology and how the users of technology are negatively impacted or controlled by the various tools they use. These negative expressions only appeared during the pre-course interview, but helped to understand how Carolyn progressed through EDIT 504.

When asked about the future of technology and what role it will play in five years, Carolyn immediately indicated a potentially negative attitude.

> If we're not already completely dependent on technology, I think even more so. I think uhh...ya know, something as simple as this [points to phone] we're going to see with children as young as five years old, because it's the only way they're going to know how to function and know how to succeed.

While this simple statement did not necessarily indicate a negative attitude, she continued her concerns.

> I was one of those kids that growing up I read a book to learn how to read, not an iPad ya know. Most people by the time they're six months old have an iPad because there's all these different apps and stuff like that. Its great but...ya know, we all did fine without it.

She further expressed her concerns when discussing what this technology did to children as they go out in public.

> I think it allows [the parents] me time. Honestly, I think...I mean I have no room to judge, I don't have children, but ummm...for the people that I see, they take their kid, they go out to dinner and rather than teaching their child to behave, they're going to give him an iPad to just shut him up. That's not teaching good behavior, that's rewarding bad behavior type of a thing. So...that's kind of where my bias lies.

These overly negative attitudes about the general use of technology did not appear in any of the post-course research data. Carolyn recognized that these attitudes were a personal

bias that she had, but they still served to impact the way she processed and interacted with course material.

Attitudes and beliefs about technology in support of social studies learning. Without the results of the post-course survey, it was difficult to determine how Carolyn perceived her understanding of social studies instruction and technology at the conclusion of EDIT 504. However, the results of her pre-course survey showed a high level of confidence over her own understanding of social studies pedagogy and use of technology in the social studies classroom prior to the start of the course. Of the nine statements in the post-course survey, Carolyn indicated that she agreed with four of the statements and was neutral about five of the statements, representing a confidence in self-perceived social studies abilities. The results of Carolyn's pre-course survey are located in Table 7.

Table 7

Carolyn's Results on Pre-Course and Post-Course M-TPCK Survey Social Studies TPCK

M-TPCK Statement	Pre-Course	Post-Course
I have sufficient knowledge about social studies.	A	N/A
I can use a historical way of thinking.	A	N/A
I have various ways and strategies of developing my understanding of social studies.	A	N/A
I can select effective teaching approaches to guide student thinking and learning in social studies.	A	N/A
I know about technologies that I can use for understanding and doing social studies.	N	N/A
I am thinking critically about how to use technology in my classroom.	N	N/A
I can teach lessons that appropriately combine social studies, technologies, and teaching approaches.	N	N/A
I can select technologies to use in my classroom that enhance what I teach, how I teach, and what students learn.	N	N/A
I can use strategies that combine content, technologies, and teaching approaches that I learned about in my coursework in my classroom.	N	N/A

Note. SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

After analyzing Carolyn's data, three major themes emerged as expressions of her

attitudes and beliefs about technology in the social studies classroom. These themes were

Technology and Preparation/Planning (TPP), Technology and Student Engagement

(TSE), and a new theme, Technology and Direct Instruction (TDI).

Technology and preparation/planning. As a major theme, technology and

preparation/planning emerged as an expression of the participant's beliefs over how she

selected appropriate tools to engage students in the learning of social studies content.

Carolyn's connection to this theme started with no connection to technology, focusing instead on creating a solid foundation of knowledge for all students at the beginning of lessons. By the end of the course, Carolyn continued to wrestle with how to successfully think about selecting appropriate tools and create an engaging classroom for students.

Prior to EDIT 504, Carolyn was greatly concerned with how to engage students, noting that certain topics could "be a great debate for upperclassmen students; juniors, seniors." However, she expressed concerns over preparation and planning, noting that in order for a successful lesson to occur "they'd have to all research it...especially with the generation that's coming through the high schools now, they're post 9-11 children, so they don't have the hindsight that the rest of us have." Creating a solid conceptual foundation for students concerned Carolyn and she did not connect a solution to the use of technology at the start of EDIT 504.

In Carolyn's fourth lesson plan, a lesson on the Holocaust and other genocides throughout history, she utilized web-based resources to afford students the opportunity to research unfamiliar historical events to provide a solid foundation for which they could discuss and debate historical topics. She wrote that "By having the students conduct research on the three additional genocides, the students are able to get a sense of other mass tragedies that occurred in the 20th century."

Carolyn started to show signs of growth in her attitudes about the use of technology to create the foundation of knowledge she expressed concern about. While she initially did not think of technology as capable of solidifying this knowledge-base, she did not recognize this lack in her own thinking, expressing during the post-course

interview that "I think I was just already there...umm...between what I've seen in my field observations and even the direction that the schools were going when I was still in secondary school." By the end of the course, Carolyn did not appear to be concerned about how students could engage with teaching but rather how she could prepare lessons using technology without taking up too much time. Carolyn indicated these concerns when she reflected on a design experience from the course where students wrote briefing papers based on research conducted to understand the dropping of the atomic bomb.

> I couldn't realistically see for the briefing papers, I couldn't realistically see doing that, just because it did seem like it would be very time consuming and...you know, and although you want to break up the monotony of lecture, PowerPoint in the classroom, that seems like that would take up a lot of time that is stressed to us that we don't have in our methods course.

Carolyn expressed a belief that technology would use valuable instructional time that she was worried she would lose. She continued to reinforce her position when asked if she could trust students to use technology to learn material and research information the way she mentioned in her fourth lesson plan.

> I don't...just from memories of my days as a student, I mean I was a...I graduated high school with honors...I was smart...I paid attention...I grasp social studies in particular...ummm...but at the same time I was lazy...ya know...I...heh...I wasn't...if you didn't tell me to go and read the book, ya know, because there was going to be a quiz on it tomorrow, forget it, it wasn't going to happen, ya know, and...when I hit a topic that I was particularly interested in, yeah I might go home

and do a little bit of research on my own to get a little more information, but I

know the dude sitting next to me isn't doing it, so...I just don't feel, unfortunately,

confident that I could trust my students to...[fades out]

Technology and student engagement. The second major theme that emerged in

the participant's data was how technology could be used to support student engagement

in the social studies classroom. For Carolyn, this was initially an expression of hope and

excitement and concluded with a perception that students were not capable of learning

social studies concepts if they were individually using technology.

During the pre-course interview, Carolyn expressed a large amount of hope and

excitement about the use of technology and student engagement, saying that "I can totally

see students having a lot of independent work on the computers when it comes to projects

and exploring new applications and presentation software simply because this next

generation is so more technologically advanced than what we are." This hopeful attitude

that technology could be used to engage students in learning new technology and social

studies concepts and skills was further expressed in her first lesson plan, where students

were to develop an understanding of early river valley civilizations. Carolyn asked

students to conduct research across multiple web-based sources and create "a Prezi

organizer presentation to display the following on each above listed civilization…."

While the lesson simply transferred the traditional worksheet organizer to a technology-

based tool, Carolyn supported the beliefs she indicated during the pre-course interview.

Carolyn continued using technology tools in a similar manner through the second

and third lessons, but in the fourth lesson, her use of technology shifted. She

incorporated a simple use of technology for students to use the "Internet for general research, youtube.com for video clips." Beyond that, students were not asked to interact with technology. In the fifth lesson plan, where students were to develop a poster for their ideal presidential candidates, Carolyn provided students with a list of information about presidents throughout American history and did not have students interact with technology in any manner.

The use of technology to encourage student engagement with social studies content was not recognized by Carolyn, but was nevertheless expressed in her course reflection when she wrote that "My understanding when it comes to teaching with technology has been increasingly improved as well. I never really thought of computer use in the classroom outside of research and essay driven as an actual possibility." This reflection indicated that she was developing lessons where students engaged with content through technology to develop complex understandings of social studies skills and content, but her lesson plans reinforced the use of technology merely to conduct research or write essays. She wrote that technology "allows those students who may struggle with liberal arts a chance to incorporate their passions into social studies education," but none of her lesson plans indicated or expressed this opportunity for students to engage with content in a platform where they could express those passions.

In the post-course interview, Carolyn discussed how she struggled with the design experience of the course and how she did not understand how the use of technology would engage students. She found the first design experience particularly challenging,

where students were asked, as a travel agent for a boutique travel company, to develop a
tour guide for a wealthy client who desired to travel the Silk Road.

> The tour guide one...it was just kind of...it seemed more a matter of like I just
> don't get it...like what is the purpose of us doing this...umm...and I get that was
> historical chronology, so were kind of creating like,...looking at the Silk Road ya
> know, and how it moved over time....how the migrants moved over time but...I....I
> couldn't see students getting anything out of it other than just looking at there was
> a silk road, here's what it looks like now, here's what happened....so not so much.

While Carolyn indicated that the design experience limited her ability to see how
technology could be used to engage students in social studies thinking and learning, other
reflections by the participant indicated that it might be her own perception of student
abilities that limited her ability to understand the role technology could play in engaging
students.

> I don't...just from memories of my days as a student, I mean I was a...I graduated
> high school with honors...I was smart...I paid attention...I grasp social studies in
> particular...ummm...but at the same time I was lazy...ya know...I...heh...I
> wasn't...if you didn't tell me to go and read the book, ya know, because there was
> going to be a quiz on it tomorrow, forget it, it wasn't going to happen, ya know,
> and...when I hit a topic that I was particularly interested in, yeah I might go home
> and do a little bit of research on my own to get a little more information, but I
> know the dude sitting next to me isn't doing it, so...I just don't feel, unfortunately,
> confident that I could trust my students to...[fades out]

Additionally, Carolyn was influenced by her siblings who are still in secondary programs.

> I see what my younger siblings have done and how much...how so much has
>
> changed since I've been in secondary school and just that ummm...ya know, again,
>
> unless they know that there's gonna be a quiz or something, an activity that's

going   was guilty of that as a student.

While Carolyn was interested in technology and expressed a hopeful attitude that

technology could be used to engage students, by the end of EDIT 504 she continued to

wrestle with her own experiences and personal foundation that students were too lazy to

be engaged in social studies thinking and learning.

   Technology and direct instruction.   The final theme that emerged as influential

over the participant's attitudes and beliefs about the use of technology in the social

studies classroom was technology and direct instruction. This theme was an expression

of how the participant viewed technology as supportive of direct instruction teaching

methods.

   Carolyn began EDIT 504 with a belief that technology was integral to improving

direct instruction, saying "I can definitely see using it not just as a way to present notes, I

grew up in the PowerPoint age in college and it was great, but I know ten years from now

that's not going to work, it's not going to be attentive enough." While her observation in

the pre-course interview indicated she was developing a belief that students would not be

engaged by direct instruction, she continued this thought by adding, "I'm slowly trying to

learn Prezi, but its, I've had no use for it, no need to learn. So, whatever note-taking

application seems to be working the best." She indicated an attitude that technology tools play an essential role in delivering instruction using a 'sage on the stage' format.

This attitude was reinforced throughout Carolyn's lesson plans, including her second lesson plan where students were tasked with learning about American leaders as the "Teacher will explain that the students will watch a series of short video clips on the important American leaders and will be advised to take notes for a succeeding activity." As the course progressed and Carolyn struggled with lesson design assignments, she fell back on the traditional model of instruction, teaching students about the Holocaust in the fourth lesson plan through a "Power point lecture on the Holocaust: (Students required to take their own notes)." This backup is continued in the final lesson plan on citizenship traits, as the "Teacher will present a power point presentation on responsible citizenship traits. Students will have to copy them down in their notebooks."

In her course reflection, Carolyn expressed an appreciation for what she has learned, writing that "What I have learned will impact my daily face-to-face interaction with students in that I will have numerous additional outlets to address social studies issues within the lines of a technical sphere." However, her outlets only appeared to be direct instruction using various technology tools, as she wrote that "I could definitely see myself utilizing movie making software, or timeline building software, or even switching up lectures from power points to prezi (sic) presentations in order to spice things up for my students."

In the post-course interview, when asked if the course changed the way she thought about technology's role in her future classroom, she indicated that technology in social studies is about how it influences the teachers' direct instruction.

> I always knew we were moving in a technological path and direction in every field, not just education so, knowing that we would be asked to use and have the ability to utilize technology was going to be present and going to be a part of everyday teaching, so...it was just more so the ways in which I could do that changed.

Carolyn noted that her own experiences as a student allowed her to interact with technology, but her current field observations were reinforcing this belief that technology supports a direct instruction approach by the teacher.

> Different from what my experiences were as a student...where as a student we had the ability to utilize the technology, just clearly not the software, but more so in my field observation it was more about the delivery, as ummm...of the lesson, so a lot more use of Smartboards, that was kind of coming in as I was going out, so we never got to experience Smartboards and umm....then the last observation I did they actually had the classroom wired for a microphone, so like when they were doing public speaking lessons and the students had to get up and give the speech, they actually had a microphone to talk into so that they projected and every student could hear umm...yeah

Carolyn stated that EDIT 504, "provided more means of presenting information to students." By the end of the course, she expressed that, "to say that I fall back on direct

instruction would probably be accurate just in the sense that they've got to get the material somehow, let me do it."

Ability to design technology integrated lessons to teach social studies. Data from Carolyn's artifacts were decontextualized based on how they related to changes experienced in the participant's ability to design technology integrated social studies lessons.

The first source of data was Carolyn's lesson plan scores across all five lesson plans. Carolyn refused to incorporate a number of elements requested because it contradicted what she was instructed to do in her methodology courses. As a result, it was very difficult to discern her thought process throughout her lesson designs. Carolyn did not provide an explanation of which historical thinking skill students would use to engage with the authentic problem and she did not include any rationale explaining the technology she would be using throughout her lessons. Ultimately, due to Carolyn's reticence to explain her thinking and designing, it was difficult to discern how her ability to design lessons changed simply by examining her lesson plan scores. While she did not explain the use of the historical thinking skills or the technology affordances, she did continuously improve in her effort to successfully design complex authentic problems. Despite her struggles, she managed to improve her understanding and use of authentic challenges to engage students in the lesson content. The summary of Carolyn's lesson plans is located in Figure 5.

Carolyn's Lesson Plan Scores
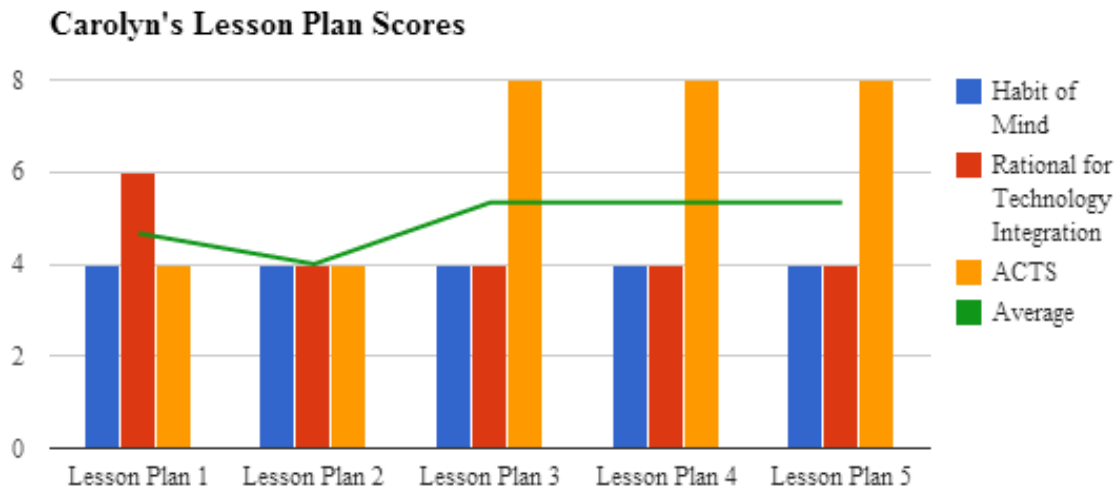
Figure 5. Carolyn's Lesson Plan Scores and Averages

Due to the lack of data in her lesson plans, the majority of data used to understand Carolyn's changes came from lesson plan reflections and the post-course interview, but also included specific data from the lesson plans and the course reflection. Three major themes emerged about Carolyn's design process. Those themes were Social Studies Goals (SSG), Authentic Thinking Skills (ATS), and Perceived Abilities (PA).

Social studies goals. A social studies teacher should be able to recognize the overt and covert goals of a lesson and be explicit about how these goals would be achieved and measured. Carolyn entered EDIT 504 influenced by her own interactions with people who did not have overt goals in social studies education, and this influence continued to be present by the end of the course.

During her pre-course interview, Carolyn expressed concern over standardized teaching and learning, expressing concern over how her passion for history would fit into future lesson plans.

> How to make my passion and my...things that I deem important what students should know fit into the damn SOLs. But, at the same time, I hated standardized testing and the SOLs growing up and I could see the restrictions that they were putting on the teachers, even in their infancy.

While Carolyn expressed a displeasure over the SOLs, her experience in her undergraduate program challenged these ideas.

> From a historical standpoint, my roommate who was from Charlotte, a very metropolitan area, was never required to take history in High School. Didn't know who President Nixon was when I met her. She was just never taught, so that's where standards would help. it was really left up to their own interpretation and their free time. I don't know many regular people, let alone history majors, that would sit down in their free time and read a history textbook front to back.

This challenge between Carolyn's passion and required SOL content created conflicting ideas in her lesson plans and lesson plan reflections. In her first lesson plan where students created an online graphic organizer, Carolyn reflected that "In creating this lesson plan, I envisioned my students already having covered the material for the ancient civilizations in the previous class period." In her first three lessons, her social studies goals were expressed as what students should have already covered rather than addressing her current lesson plan goals. This method of addressing the social studies

goals in lesson design began to change around her fourth lesson plan, writing that "This lesson will be covering the Holocaust, the Armenian genocide, Pol Pot's Cambodia, and the genocide in Rwanda through direct power point instruction, individual and group activities, as well as a culminating reflective summary of what they have learned." While she did not address how these goals would be measured, she did recognize the direct goals of the lesson. Additionally, in the fifth lesson plan, a lesson on civic participation and the ideal presidential candidate, she began to identify covert goals as well, writing that "By having them look at the biographical and work experience characteristics former and current Presidents, the students would hopefully get a broader understanding of who these men were at the time they were elected into office." This was in contrast to her overt goal of ensuring students were "looking specifically at the characteristics that make him/her a good citizen."

As she reflected on the course, Carolyn indicated that overt goals were not the only important concept to teach in a lesson, writing that "It is important to make sure our future students gain the knowledge necessary to their education, but still understand the importance of why they need to know the materials." However, in her post-course interview, this initial perception of covert goals was challenged, saying that historical thinking skills were not as important because "there is still the standards structure of having to follow the Virginia SOLs and particularly social studies the NCSS themes." She expressed her actual attitude about covert goals as she spoke about the importance of the overt social studies goals.

Not really...it was just more a matter of umm...in my mind, you know, you can fill

say...a unit...with different activities...but at the end of the unit, the students have

to know certain particular facts and concepts that you're just not going to hit every

single one by doing an activity or doing umm...you know...showing a film or

something like that.

Authentic thinking skills. The second theme that emerged in the participant's

data was the way in which she incorporated authentic problems to engage students in

complex historical thinking skills. This theme emerged as a combination of how the

participant designed authentic problems and how she perceived the use thinking skills to

solve those problems.

At the start of EDIT 504, Carolyn expressed a concern over how to engage her

students in social studies with the same passion and excitement that she had for the topic.

One of my biggest challenges is...especially knowing what my strong point is in

history and in my concentration, that not everybody, not every student, especially

not every 10th, 11th, 12th grader that comes into my classroom is going to have

the same passion or the same historical mindset to be able to really look at the big

picture and then be able to understand multiple points of view.

Carolyn recognized her own challenge to develop lesson plans that engaged students in

content she recognized as potentially disengaging for high school students.

As Carolyn designed lesson plans, she struggled with explaining how historical

thinking skills would be used to engage students in solving an authentic challenge. In her

first lesson plan, she wanted students to learn about early river valley civilizations and

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wrote that the lesson, "Requires students to employ higher order thinking in order to synthesize how one civilization may have impacted another." Her vague conceptualization of how students would interact with and think about content in relation to an authentic problem plagued her throughout her lessons. By the fourth lesson plan, her lesson designed around the Holocaust and 20th century genocides, she began to show a developing understanding of these concepts, writing that the lesson "Requires students to employ higher order thinking in order to synthesize the severity of these crimes, as well as see how closely they existed to each other in the scope of history." However, even this explanation was vague and lacked an indication that she truly was able to design an authentic problem that required students to engage with historical content in order to solve that challenge.

Writing in her course reflection, Carolyn expressed that part of her challenge came from having to keep students entertained in her lesson plans.

> I always accepted that there was a purpose behind my teacher giving me assignments and I just went about and did them. I never questioned the interest a student who wasn't necessarily as intrigued as I was to learn the content. I have learned and come to accept that the generation of students in secondary schools now have come from a world of instant gratification, and therefore always seem to have a need for entertainment, especially in education. As a result, we as future teachers need to constantly re-evaluate our lesson plans and learn to adapt with the changing technology out there.

When discussing her lesson design skills in the post-course interview, she indicated that she appreciated elements of the design process while recognizing her continuing struggles, saying "Definitely the ACTS, and I would by no means say that I've mastered it." When asked if there were any concepts she did not find useful in helping design lesson plans, she did not believe that historical thinking skills were useful in helping her to design authentic challenges in the classroom.

> I guess the habit of the mind more so umm...looking in depth at historical thinking, historical chronology, umm...and the other remaining ummm...that are just blanking at the moment, umm...themes...again its probably more a matter of I'm just over thinking it as I'm trying to plan a lesson for example, umm....that I, ya know, gotta make sure I hit that point, but if I just plan it out on my own, it probably would have fallen in there anyways, but I'm probably just over thinking it.

By the end of EDIT 504, Carolyn recognized that she would continue to wrestle with incorporating complex thinking skills to solve authentic problems in her lesson design process.

> I don't know...like...like...I guess I was looking at it more from just the historical side of it or...umm...the government or economics side of it when...we were on each appropriate lesson plan...ummm...I was kind of looking at it as two separate entities and that, ya know, here was the habit of the mind stuff I needed to hit in said lesson plan, and here was the acts stuff I also needed to hit, but they weren't necessarily conjoined this way if that makes sense…

Perceived abilities. The final theme that emerged in Carolyn's data was the way she expressed her abilities to interact with course content in her lesson designs. This was a complex theme that encompassed both the participant's own perception of her ability to deliver direct instruction as well as her perception of what students were capable of doing and how that impacted her ability to design lessons.

In designing her lesson plans, Carolyn expressed concerns over what students were capable of doing in order to make the lesson successful. In her first lesson plan, she wrote that "The requirement of the prezi organizer allows visual learners, less skilled readers, and ELL students to participate in the lesson." Additionally, in her final lesson plan, she wrote that "The students will be required to take notes from a power point presentation being projected onto the front board. They will need to take notes quickly in order to not waste time needed for the activity."

In her post-course interview, she expressed concerns over student abilities, reflecting on the briefing paper design experience, "I couldn't realistically see doing that, just because it did seem like it would be very time consuming." This concern existed despite her belief that "I've always been very umm...forward thinking having my students, my future students rather, umm...make sure that they are able to take away good research skills from my class."

In addition to her perception of students' abilities impacting her lesson designs, she also reflected on her own abilities, highlighting in her post-course interview the importance of identifying "the way you can deliver the message or the lesson."

Additionally, when reflecting on designing lessons and her own experiences as a student, Carolyn spoke about structuring lessons in multiple ways.

> Thinking in the sense of being in a classroom, if I was to for some reason teach all five of those lessons back to back so to speak, if I was a student sitting in my class, I don't want by the time I get to the third lesson, if they were all structured the same way, I would be bored out of my flipping mind, so just making sure that each one was a little bit different just so that umm...you know, that I could either use one where I really utilize video but then the next one it was really hands on activity, so just breaking up the monotony

Carolyn perceived her ability to choose content as also being important to lesson design, stating in her post-course interview that "the fact that, ya know, as I said before I'm a holocaust based student, so you know, my go to lesson plan is going to be kind of structured how I can teach the holocaust." By the end of EDIT 504, Carolyn's ability to design lessons was impacted by her perception of her students' abilities to understand and engage with content and her own ability to choose content and vary the learning environment.

Impact of course design on participant learning. During the course reflection and post-course interview, participants were asked about the structure of the course and how it impacted their learning. Carolyn provided feedback on how her interaction with the course was impacted by various activities, requirements, and the content. With the data decontextualized, her interactions emerged into three themes. These themes were Course Design (CD), Teaching Content (TC), and Learning Activities (LA).

Course design. When analyzing Carolyn's data, it was apparent that the design of

the course had a direct impact on her ability to learn the concepts within EDIT 504. This

theme was her expression of how that design impacted her learning.

One of the initial designs of EDIT 504 was to allow for collaborative learning,

where students would work together to learn from each other's mistakes, challenges, and

successes. Carolyn found this to be helpful as she struggled with the course material,

reflecting that, "The things that I struggled with the most was the purpose for creating an

authentic problem, yet it quickly became the thing that I took note of right away when

looking at other peoples' lesson plans."

While the collaborative learning was helpful for Carolyn, she found that the

amount of content designed into the course to be overwhelming, saying in the post-course

interview that "we have to turn around and discuss said lesson after already having done

a discussion board, and then we're going to have to build a whole lesson ourselves, that's

a lot of time that I don't have." However, she recognized that part of the challenge of the

course design was its online nature, and that learning online required her to be "mindful

of the issues that are associated with remembering to keep up with the workload

presented through an online course." Despite the challenge of the workload, Carolyn

expressed an appreciation of the online nature of the course design, allowing her to work

it into her busy schedule.

> Being able to do it on my time quite frankly, I mean obviously I am probably the
>
> odd ball because of the fact that I signed up for it because I needed an extra class
>
> but...if the same situation ya know, with...back up 4 months, 5 months ago when I

registered for this class, had it been taught in classroom, I probably wouldn't have taken it, I mean I was truly looking for an online class because I knew my schedule was going to be hectic so, having it as an online class and the fact that it is technology integration, I feel like if we had been in an actual classroom, we would have been in our laptops pretty much the whole time anyway.

Teaching content.   While the course design focused on how the structure of the course enabled participant's learning of content, a second theme emerged that focused on the content of the course. Teaching content revolved around how Carolyn's initial expectations of the course intersected with the material and concepts actually covered.

When signing up for the course, Carolyn "was truly looking at it in the sense of the software, ya know, what's out there that I could utilize as a teacher...and...I mean...I feel as though that was really hit home this semester." While she appreciated that her expectations were met, she also developed an understanding of the students she would one day impact, reflecting that "One of the main things that I have learned about myself in taking this course has been my ability to accept that not all students are like me when it comes to social studies."

Despite this growth as a teacher, Carolyn also struggled with some of the teaching content. She had a difficult time separating what was to be completed as a student for a grade and what was to be thought about as a graduate student informing her future practice.

I struggled more with the sense like...umm...here's ...if...here's the hypothetical situation, you're a hypothetical students sitting in the class, this is the task being

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asked of you...I was having trouble understanding that it was where the

hypothetical student that...in my mind when I would read through it, it was 'this is

what we're doing'

However, near the end of the course, Carolyn began to develop an understanding of the

teaching content after she looked at the design experiences from a new frame of

reference, which enabled her to appreciate the course content.

It was kind of about the end where, after you and I discussed kind of what exactly

you expected out of us, umm...that I kind of had a new perspective looking at it...like

talking...like I could see that...I can see why this would be   effective because...umm...as

compared to I'm actually doing it

Learning activities. A final theme that impacted the participant's learning of

course content, learning activities emerged as the participant's feedback on how specific

activities influenced how she learned and what she learned.

Carolyn faced a lot of challenges with EDIT 504. Part of this was expressed in

how she connected with course content, which was arranged around the five principles of

historical thinking. While she struggled with modules where the material was unfamiliar,

she felt that "I have a very much research background, come from a research background

rather, with an emphasis in holocaust studies, so kind of for me particularly that

[research] unit really clicked." Despite the struggles she had with content she was

unfamiliar with, she appreciated the opportunity to experience new content, saying that

"the first one we had to look at the...ancient civilizations and then having to do an

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economics lesson and a US history lesson, you know it kind of forced me to go out of my comfort zone so to speak...umm...so that was a positive."

While she appreciated experiencing new content and designing lessons in unfamiliar subjects, she also struggled with a lot of course content. Each module had a series of reading assignments, and Carolyn felt very overwhelmed by these required readings.

> Like for the first week and then the second week was going to be the examples
>
> and then build the lesson so...just to try and keep myself organized particularly for
>
> this class so for me..umm..the readings got to be a little long or I would typically
>
> only be able to fully read maybe one or two and just kind of skim over the last
>
> two readings just because it was a matter of like...mass production so to speak.

After the readings, students were asked to engage in discussions with fellow classmates. Carolyn stated that these discussions were not helpful in advancing her knowledge.

> It was just kind of like repetitive like...especially being in our small groups ya
>
> know...our group of four after you know, two days or two lessons rather saying
>
> 'yeah, I read that too', ya know, 'yeah, you got it', you know, it was just kind of
>
> like 'alright', ya know, we get the principle, umm....I don't know, in my opinion it
>
> probably would have been a better thing to have it like optional, if you have
>
> questions please take it up with your group members, but not so much a
>
> umm...actual discussion of what we've learned because after a while it just kind of
>
> got to be like...ok...

Carolyn struggled with the design experiences, where students were asked to completed lessons from the perspective of a student to develop an understanding of what a lesson design that incorporated authentic learning and historical thinking skills could look like. These assignments were meant to be completed by the participant, but only as far as it allowed them the opportunity to develop a conceptual understanding of what lesson design looked like when incorporating the concepts of the course.

> I struggled more with the sense like...umm...here's ...if...here's the hypothetical situation, you're a hypothetical students sitting in the class, this is the task being asked of you...I was having trouble understanding that it was where the hypothetical student that...in my mind when I would read through it, it was 'this is what we're doing'

This was a challenge for Carolyn throughout the course and impacted her learning of course content.

Summary. Carolyn took EDIT 504 in order to fulfill a class-load requirement. With this approach, Carolyn brought with her an overly negative perception of the uses of technology as well as a narrowly focused personal foundation of technology's uses. As she progressed through the course, her attitudes and beliefs about the general uses of technology and its uses in social studies instruction reinforced her beliefs that teachers hold the right to use and disseminate the use of technology in the classroom, whether for direct instruction or student engagement. As her experience designing lessons evolved, she wrestled with a number of the ideas of the course, including balancing overt and covert social studies goals and how her perceived abilities of students and herself

informed her lesson designs. The challenges she experienced were influenced by the design of the course, as she found it difficult to expand her understanding of course content in a number of the learning activities and found that the amount of material was overwhelming. Despite the challenges that she had, Carolyn's reflections and post-course interview indicated that she continued to wrestle with the ideas of the course and how to incorporate those concepts into deeply-held beliefs about what traditional classroom instruction looked like in the social studies.

Case Study 4

 Biography. The fourth case study followed the journey of Adrienne, a 27 year-old government consultant with the Department of Defense. Adrienne's undergraduate degree was in International Politics and was previously employed in communications with the Department of Defense for five years. Despite the relationship between her job and her undergraduate program, Adrienne felt unfulfilled with her career and always wanted to try her hand at teaching. At the start of the course, she had completed her first methods course as well as thirty hours of classroom observations and hoped to complete her teaching internship during the fall of 2014. Adrienne noted that she felt a special connection with middle school students and desperately hoped to teach in that environment. Adrienne's age and experience placed her at the edge of the digital native framework. While she did not have a large exposure to digital technology in the K-12 classroom, she did recall some instances of use in her personal life during that time period.

General attitudes and beliefs about technology in teaching. The results of

Adrienne's M-TPCK Survey were examined. Of the 12 statements focused on general

attitudes and beliefs about technology in the classroom, Adrienne reported a change in

only two of these statements. She reported a one point increase from disagree to neutral

in her knowledge about different technologies while feeling that her technical skills

needed to use technology decreased by one point from agree to neutral after EDIT 504.

The results of her survey are summarized in Table 8.

Table 8

Adrienne's Results on Pre-Course and Post-Course M-TPCK Survey General TPCK

M-TPCK Statement	Pre-Course	Post-Course
I know how to solve my own technical problems.	N	N
I can learn technology easily.	A	A
I keep up with important new technologies.	N	N
I frequently play around with the technology.	N	N
I know about a lot of different technologies.	D	N
I have the technical skills I need to use technology.	A	N
I have had sufficient opportunities to work with different technologies.	N	N
I can choose technologies that enhance the teaching approaches for a lesson.	N	N
I can choose technologies that enhance students' learning for a lesson.	N	N
My teacher education program has caused me to think more deeply about how technology could influence the teaching approaches I use in my classroom.	A	A
I can adapt the use of the technologies that I am learning about to different teaching activities	N	N
I can choose technologies that enhance the content for a lesson.	A	A

Note. SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

The results of Adrienne's survey were unique in that she reported very little change from the start of the course to the end. In the statements that did change, the increase was reported as basic knowledge of various tools while seeing a decrease in her belief of her ability to use those tools. These results were interesting and required a deep investigation and examination of her learning artifacts from EDIT 504. Adrienne's pre-course and post-course interviews, her five lesson plans and lesson plan cover sheets, and the post-course reflection were analyzed. Similar themes to previous case studies as well as a new theme that was unique to Adrienne's experience emerged. These themes were Personal Foundation (PF), Learning (L), Teaching (T), and the new theme of Interaction (I).

Personal foundation. A major theme that appeared to influence Adrienne's attitudes and beliefs about technology in general are her personal foundations about technology use. These foundations are her expressions of how she used technology, how she perceived its use in schools, and what she believed is the role that technology plays in the future. These beliefs were mostly expressed during the pre-course interview and provided an understanding of how Adrienne approached technology and its uses.

Prior to the start of EDIT 504, Adrienne was extremely open and engaged with technology. Her interaction with technology was a near-constant exercise, noting that "if I'm not sitting in front of a computer, I am on my Smartphone. Pretty much from the time I wake up to the time I go to bed, and then I work all day in front of a computer." Her role for the Department of Defense forced her to interact with technology on a regular basis, allowing her access to "social media channels, virtual events is one of our

big things, I've been in all of those platforms doing that stuff...I used to do HTML coding." She kept an open attitude about technology, welcoming its affordances to support her lifestyle. She felt that part of this open attitude came from the fact that "Personally, I think I pick things up like that relatively easily." Adrienne believed in a flexible approach to technology, using tools until you run into problems and then solving those problems, stating that "I don't really tend to have too much formal training, if there's something I don't know how to do, I know where to find...I do a lot of trial and error, like trying random things."

While Adrienne was confident in her ability to learn tools through trial and error, she expressed concern that "I think my issue is more of just not being aware so much of what's out there. It seems like every day there is a new app, like WhatsApp and SnapChat, I don't even know what those are." She also noted that "I feel like especially, maybe, as an older person, it seems like 'Oh, that's what the kids are using,' I don't stay on top of that regularly." Despite her concern over not knowing the latest tools, she strongly believed in the role technology played in society, stating that "as we have seen this global economy emerge, you need technology for communications, transportation, basically almost every aspect of life."

By the end of EDIT 504, Adrienne's open and positive attitudes and beliefs about technology continued to be expressed in her personal foundations. Her experience using various tools supported her favorite approach to technology of trial and error while expanding on her understanding of how tools are brought into the classroom, noting that an "important lesson I learned was to test out software myself prior to incorporating it in

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the lesson." Adrienne was able to incorporate her personal foundations into her attitudes and beliefs about using technology in school.

Interaction. A unique theme that emerged for Adrienne was her attitudes and beliefs about technology's ability to support interaction and communication between students, students and teachers, and people in general. This theme was partially influenced and expressed by her current professional role in communications and developed as a result of the unique methods of interaction that technology supports.

This theme initially emerged as a result of Adrienne's international politics background, noting that technology has made "everything easier, you're making the world a lot smaller place, so, that is...I guess...the impact I think it has." She noted that technology has impacted "humans from the beginning of time. Starting with agriculture and writing on through the wheel and all that, I mean I think the biggest impact are...like I said communication..." Additionally, while many of her attitudes about technology's role in supporting interaction are positive, she also recognized that "the negative...drawback is that because that world is a smaller place, it's easier to...spread more nefarious things...now there's a lot more ramifications for other kinds of connected things."

While Adrienne believed in both positive and negative impacts of increased interaction through technology, she argued that this interaction will directly impact school, noting that "...ultimately, every classroom...like teachers are already seeming to put stuff on Blackboard and still make their students do things so...I think you're gonna see a lot more of that shift about...there's never an excuse anymore." This recognition of

interaction using technology goes far back for Adrienne, who recalled that in "Middle School is when we really started using the Internet more. I can always remember signing online, chatting with my friends and chat rooms were really cool." Adrienne believed that this interaction through technology was constantly occurring and that "students are using it, so if you want to reach your students, you're going to need to use it in a way that will resonate with them."

Learning. Learning was Adrienne's expressions of how she recognized and used technology in the process of learning, both for herself and for students in general. Adrienne's reflections on learning occurred during the pre-course interview as well as her lesson plans and post-course reflection. These reflections showed how Adrienne interacted with technology as a student, how it impacted her as an adult learner, and how she perceived its uses in future classrooms.

Adrienne initially reflected on her own use of technology as a K-12 student, remembering that "it was pretty much for writing, if we had big project...you had to go to the library to use a computer if you wanted to use one, so you weren't ever really doing anything during like...lessons with technology." The use of technology for a specific purpose, whether it was writing a paper, researching, or learning to type, comprised the bulk of Adrienne's experiences as a learner, remembering that "what we actually used it for was pretty much just research and writing. I can remember that if we had a project we'd still print it out and put it on the poster with construction paper."

These limited experiences with technology as a K-12 student did not limit the way she interacted with technology as an adult learner, realizing that "I like online classes.

Working full time, it kind of limits what I can do. I think this is the way we are going in the classroom." This open approach to the future of learning with technology is partially influenced by her own use of tools to support her learning. While reflecting on the Blackboard Mobile App, she noted that "It's nice not to have to log into my computer every time...it sends you push notifications every time grades are posted or content is added...it makes it a lot easier." She expressed a belief in the role technology played in making learning easier.

This attitude about making learning easier intersected with her lesson plans, creating an idea of choice for her students. While her early lesson plans forced students to use one tool for their learning, by the fourth lesson plan, where students are tasked with researching a specific example of genocide in history and developing a website to present to a UN Committee, she wrote that "Committees may choose to build their presentations using Glogster, Prezi, or Timeglider, which they will have experience using from previous activities in the class." She continued to develop this concept of student choice in her course reflection.

In the age of the Internet, students can now explore topics within the content area that spark their interests. I recognize that designing activities so that students have the opportunity to pursue a sub-topic from a selection of topics or a certain area of the topic that most interests them will likely increase their motivation to participate and stay engaged.

Adrienne strongly believes in the role that technology played in the learning process for students, concluding that "the key lesson I learned about teaching with technology is that it fosters the ability for students to learn on their own."

Teaching. In understanding Adrienne's attitudes and beliefs about technology in schools, a theme that emerged was how technology intersected with the practices of the classroom teacher. Adrienne's understanding of teaching and the role technology played initially came from her experiences as a K-12 student and evolved through EDIT 504 into a perspective of how teachers can use technology to enhance their teaching as well as the perception schools have of teachers and the role technology should play in their classes.

Reflecting on her time as a K-12 student, Adrienne quickly recalled the direct instruction of her teachers, "other than...the transparency where you write with the marker...some teachers, I feel like had started using PowerPoint projections." As a student, Adrienne understood teaching with technology to occur through direct instruction, unless it was the librarian "because the teacher would have to reserve the space...so yeah, I think the only times we were actually in there from what I remember was to learn how to use the Internet."

This limited exposure to classroom practitioners using technology concerned Adrienne. She noted that the "good thing about my field experiences so far is that I have been able to see a different teacher each class period and a different class, so I've gotten to see a wide range of skills and different strategies." Her exposure to different teaching styles and integration of technology influenced her perception of technology use and teaching. She believed that "it's kind of hard for me to stay on top of things, these kids

know the latest and greatest everyday when it comes to technology and I think they enjoy it." Her hope was that through EDIT 504, she would "learn other activities, other things I can do that are gonna keep [students] interested and not just bored out of their minds wanting to check their cell phones all the time."

After her journey through the course, Adrienne reflected on the role that technology played in supporting teachers' instruction.

> I also think that technology makes it easier for teachers to stay organized from one class to the next. Through the suite of tools available to the teacher such as online grade books and Google Docs, teachers do not necessarily need to collect paper homework assignments, file them, remember to pass them back out when a student returns from an absence, etc. The teacher then has more time to prepare engaging lessons with authentic learning scenarios.

In addition to supporting the day-to-day routine of instructors, Adrienne believed that "students are using [technology] so if you want to reach your students, you're going to need to use it in a way that it will resonate with them." In addition to her positive attitude about technology supporting teachers' daily routines as well as classroom instruction, Adrienne stressed that "schools...are really starting to embrace [technology], so I think they are looking for candidates who have that knowledge and experience...so now I just...I guess I feel more confident in it."

Attitudes and beliefs about technology in support of social studies learning.
Nine statements in the M-TPCK survey related to the participants' perception of their understanding of how technology can be used to support social studies teaching. As with

the general technology statements, Adrienne reported very little change in her pedagogy, content knowledge, and technology use as it related to social studies teaching. Of the nine statements, Adrienne reported no change in five of the statements. Of the four statements that did change, Adrienne reported a perceived increase of one point in all of these statements, with three of the statements moving from neutral to agree. Additionally, three of the four statements dealt directly with how Adrienne perceived her ability to find and integrate technology to support social studies instruction. The results of Adrienne's survey are summarized in Table 9.

Table 9

Adrienne's Results on Pre-Course and Post-Course M-TPCK Survey Social Studies TPCK

M-TPCK Statement	Pre-Course	Post-Course
I have sufficient knowledge about social studies.	A	A
I can use a historical way of thinking.	A	A
I have various ways and strategies of developing my understanding of social studies.	N	A
I can select effective teaching approaches to guide student thinking and learning in social studies.	A	A
I know about technologies that I can use for understanding and doing social studies.	D	N
I am thinking critically about how to use technology in my classroom.	N	N
I can teach lessons that appropriately combine social studies, technologies, and teaching approaches.	A	A
I can select technologies to use in my classroom that enhance what I teach, how I teach, and what students learn.	N	A
I can use strategies that combine content, technologies, and teaching approaches that I learned about in my coursework in my classroom.	N	A

Note. SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

The results of Adrienne's survey indicated that while her understanding of social studies pedagogy and content knowledge did not change as a result of EDIT 504, the role that technology played in impacting social studies instruction was positively influenced. In order to understand these changes, Adrienne's artifacts were examined to identify statements that related to her attitudes and beliefs about technology in social studies teaching and learning. Three important themes emerged, which were Technology and Preparation/Planning (TPP), Technology and Student Engagement (TSE), and Technology and Student Outcomes (TSO).

Technology and preparation/planning. As a major theme influencing Adrienne's attitudes and beliefs about technology and social studies instruction, technology and preparation/planning represented her expressed perception of how she recognized and incorporated technology into her lessons. This theme emerged from her pre-course interview and her course reflection as the way she approached the discovery and inclusion of various resources to support her learning environment.

Prior to the start of EDIT 504, Adrienne already had an extremely positive attitude about technology and its role in social studies instruction, stating that "I think you can use it for every single lesson that you do. Just to pull up primary sources is one example." Part of this attitude came from her own belief in staying organized in the planning process, noting that "One thing I pride myself on at work is I am an extremely organized person so I tend to use technology as much as possible in that sense." This belief in her own abilities to support the planning process helped her develop an attitude that technology would always be available in the social studies environment, reflecting

that "just like we do with Blackboard, I think that's going to be their biggest thing...you're going to be posting your assignments online, you're going to be getting your information online, in addition to the research side of things."

By the end of EDIT 504, Adrienne's belief in her own ability to plan and prepare technology integrated lessons strengthened, noting during her post-course interview that, "I know I could walk into an interview or into a classroom and be able to say, 'I could not only incorporate technology, but I could do it effectively.'" In her course reflection, Adrienne shared what that effective incorporation looked like.

> If I want students to participate in a WebQuest, for example, then I should walk through the WebQuest as if I were a student to ensure it works correctly. By preparing for the worst-case scenario and ensuring the technology supports the lesson in the way that I intend, I will likely achieve better outcomes than simply giving students the assignment and hoping for the best.

Additionally, Adrienne shared an evolving attitude about preparation and planning, writing that "if students need to conduct Internet research and the Internet is not available that day, I might have printouts of a text available on the same topic, so students can participate in a different activity." By the end of EDIT 504, Adrienne expressed an attitude that indicated technology was not the primary concern of a lesson, but that it worked effectively to support student learning.

Technology and student engagement. The second theme that emerged focused on how Adrienne's preparation and planning turned into student engagement in the

lesson. This theme was the participant's expressed belief of how their students engaged with social studies content through the use of technology.

Adrienne approached EDIT 504 with a strong belief that "social studies is one of the disciplines that definitely thrive with technology in the classroom more so than almost any other, if not all of them." This positive attitude was strengthened by her positive field experiences, where she observed that "He was teaching the Spanish American war and he had the kids go onto Google Earth to find the Philippines and Guam and it was neat to see them apply, just learn how to use that tool." While she was energetic and excited about the role technology played in engaging students in social studies, she had trouble identifying and explicitly stating how this process occurred, saying that "I'm not sure, I think just seeing how easier things are with technology...I mean...I don't know...like I said, just the organization side of things...ummm...I don't know how else to answer that."

While creating her lesson plans, Adrienne was able to develop a stronger understanding of how technology engaged students in social studies learning. In her first lesson plan where participants designed a World History lesson on early river valley civilizations, Adrienne had students "use the Internet to search for images and information. They will compile their information design their civilization's social media page in Glogster. Groups will then build a timeline in Glogster that shows each civilization's time, place, and connections." Adrienne used her positive attitude about technology to develop a concrete understanding of how technology was used to engage students in the content. In her fourth lesson plan, a lesson focusing on understanding the

genocides of the 20th century, she had students "practice searching with specific terms across broad types of sources using search engines. They will need to evaluate the credibility of Internet websites and content. They will also learn how to compile various multimedia into presentation software."

Adrienne entered EDIT 504 believing that "I think there's just so much that you can do in Social Studies with [technology]." By the end of the course, she continued to reflect on her beliefs about the role technology plays in the social studies classroom.

> I think going into the course I obviously wanted to learn more about it so I think I
> was already more receptive to technology in the classroom, so I don't think I view
> it as more important now, I think it's just as important. Umm...but again, it just
> changed my view of how to use it I guess

Adrienne's positive attitude remained constant as she developed an understanding of how to use technology to engage students, a belief that she was not able to articulate at the beginning of the course.

Technology and student outcomes. The final theme that impacted the participant's attitudes and beliefs about technology in the social studies classroom was technology and student outcomes. For Adrienne, this theme started as an expression of how she believed she needed tools to succeed in having students develop products in the classroom. However, by the end of EDIT 504 this theme evolved into an expression of how students concluded the class with a complex understanding of social studies content and thinking skills.

During the pre-course interview, Adrienne expressed a desire to learn about specific tools that would help her future students create products. She noted that "[technology] lends itself well to actually putting things together and learning things...there was one where these kids could go and make a little museum display thing, they could pull the pictures and different videos...that was really cool." While she held a belief that technology played an important role in allowing students to create products, she also hinted at a belief that there was something more, asking about "ways that I guess in addition to finding those specific activities, how you can incorporate them well you know?"

In her second lesson plan, where she asked students to define the most influential President in history, she continued her initial expression of technology as a product development tool, writing that "the polling app will give students the overall purpose to the activity, providing a clear outcome/product for them to work toward." By the fifth lesson plan, a lesson introducing students to civic responsibility, Adrienne started to hint at developing skills beyond a simple product, writing that "Students will learn how to create and edit pages within Google Sites. They will practice conducting research using search engines, as well as compiling thoughts and ideas through typing historical narratives and organizing examples." Her attitude about developing student outcomes began to move from creating a product to examining the thinking and learning that occurred in the development of a final product.

In her course reflection, Adrienne noted that "Direct instruction can now comprise a smaller segment of a lesson, because technology enables students to participate in

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activities that will further broaden and deepen their understanding of the content." When asked about her attitude about developing students' complex understanding of historical content, she reflected that "it took it like a step further than just technology and it helped kinda create a context for building different assignments or activities for the classroom that maybe technology wouldn't necessarily have much to do with." Adrienne's attitudes and beliefs about technology changed from the use of tools to create products to the use of technology to enhance content for students so that they could develop a deeper connection to the content using complex thinking skills.

Ability to design technology integrated lessons to teach social studies. The participant's artifacts were also examined for their relation to the third research question, how the course influenced Adrienne's ability to design technology integrated lessons to teach social studies.

The first source of information examined was the results of Adrienne's lesson plans. Adrienne's first lesson plan, which asked students to develop an Ancient River Valley civilization social network, showed signs that she did not understand the role of historical thinking skills or the need to address and understand which affordances were being used. After this initial lesson plan and some in-depth feedback, Adrienne understood the importance of these two critical elements of her lesson and drastically changed her lesson designs. Her final four lessons included significant improvements as well as complex descriptions of the technology and historical thinking skills used in the lessons. Additionally, while Adrienne initially expressed confusion and struggled in creating authentic problems, her designs were ultimately well thought-out and engaging

for students while remaining practical. Adrienne was very successful at understanding

her own weaknesses in her lesson design and addressed and improved those weaknesses.

The results of Adrienne's lesson plans are summarized in Figure 6.
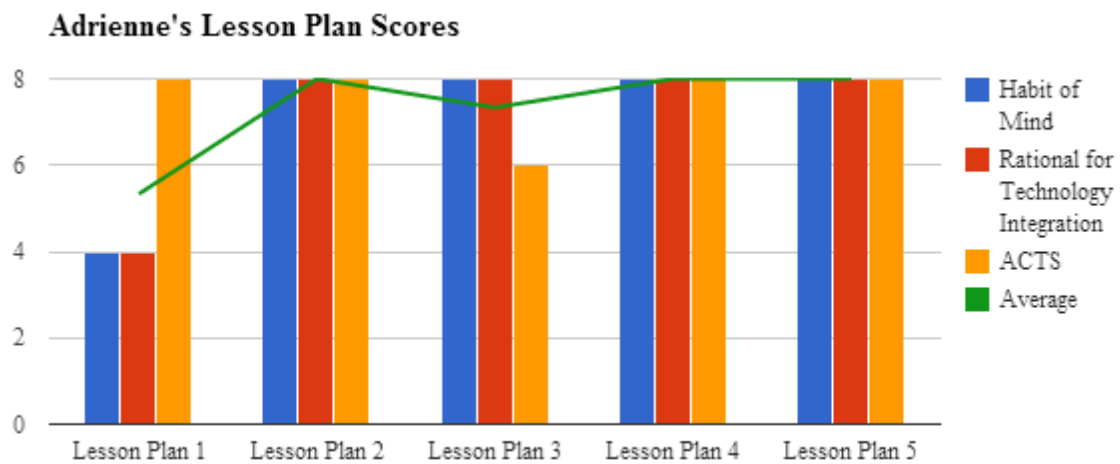
Figure 6. Adrienne's Lesson Plan Scores and Averages

While Adrienne's lesson plan scores provided a glimpse of her evolving lesson

design process, additional artifacts for this research question included the lesson

reflections, course reflection, and post-course interview. There were a few important

artifacts that came from the pre-course interview to help explore Adrienne's changing

abilities. Once the data was decontextualized, it was analyzed for emerging themes

related to Adrienne's lesson design process. The themes that emerged were Social

Studies Goals (SSG), Authentic Thinking Skills (ATS), and Technology Use (TU).

Social studies goals. An integral part of developing lesson plans is recognizing and addressing the content goals of the course. These goals were both explicit goals that were necessary curriculum topics as well as covert goals that would be learned through lesson design. During the coding process, it was apparent that Adrienne did not develop a distinction between overt and covert goals, rather seeing them as supportive of each other in the lesson design process as a method for engaging students.

Throughout her lesson design process, Adrienne expressed a desire to keep her goals connected to what students would be doing in her lessons. In her second lesson plan reflection, a lesson where students explored past presidents in history, she expressed her content goals as intricately linked to the manner in which students would be learning the lesson content, writing that "when I first started brainstorming for this lesson plan, I tried to think of potential authentic problems related to the scenario. I tried to think of a situation where one would evaluate Presidents across American history." She developed a long-range vision for her lesson, explaining that "We will refer back to this activity throughout the rest of the course as each President comes up in the curriculum."

In her lesson designs, Adrienne expressed a need for the content goals to be explained in relation to what students would be doing. In her third lesson plan she asked students to develop a budget for the local school district, explaining that "the lesson is meant to help students understand how the local government develops the school budget...this will also help them recognize the impact of local and state government policies on their daily lives." Adrienne's lesson plan reflections indicated an important

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connection between overt and covert goals, reflecting on the need for students to connect

with content in order for goals to be accomplished.

> For this lesson plan, I wanted students to deliberate on the aspects of good
>
> citizenship through their own discussions and ideas, rather than simply being told
>
> by the teacher. I also wanted to incorporate opportunities for students to research
>
> examples of individuals who they admire, including both famous and non-famous
>
> people.

In her course reflection, Adrienne continued to highlight the importance of

student engagement when thinking about social studies goals.

> In the age of the Internet, students can now explore topics within the content area
>
> that spark their interests. I recognize that designing activities so that students have
>
> the opportunity to pursue a sub-topic from a selection of topics or a certain area of
>
> the topic that most interests them will likely increase their motivation to
>
> participate and stay engaged.

She wrote in her reflection that "if students are more engaged, they will likely remember

not just the names, dates, etc., but rather, they will likely remember the broader concepts

like the significance of the topic and why it matters." For Adrienne, overt and covert

goals didn't matter if there was no method planned for engaging students. However, with

that engagement she believed that if "it is more engaging...I definitely think they will

remember [the content] more."

> *Authentic thinking skills.* The second theme that emerged as indicative of the

participant's ability to design technology integrated lessons revolved around how

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Adrienne interpreted her ability to develop authentic problems that asked students to engage in complex historical thinking skills. This theme was a combination of two important concepts from EDIT 504, the use of authentic problems to frame course content in a practical, realistic manner and the use of historical thinking skills to engage with content, which are complex thinking skills used by practitioners to engage with social studies content. While most of the data came from Adrienne's lesson plans and lesson reflections, she was wrestling with this concept at the start of the course, briefly touching on these concepts during the pre-course interview.

Adrienne started EDIT 504 struggling to ensure her lessons designs engaged students while at the same time integrating technology without distracting students.

I guess the first things is, if you are doing it in the classroom, it's not an assignment at home, then how do you kind of monitor to make sure that they are all on task? I know when I have my computer in class it's kind of hard for me not to check my email or go on Facebook and things like that. I can imagine it's even harder for a 10th grader.

In addition to her struggle engaging students, she also had trouble navigating teaching methods that were discussed in her methods classes, wondering if direct instruction was really such a bad method of instruction.

I am trying to fight against that. I can understand...I think direct instruction gets a really bad rap right now unnecessarily. I think it's ok to use for a good portion of your class or at least some of your class, especially when you have so much to cover for the SOL and things, but for me personally, I'm not the biggest fan of just

group work all the time and I know a lot of teachers, and especially at George Mason they really like that.

As Adrienne developed her lesson plans, she continued to wrestle with engaging her students and the role group work and direct instruction played in her lesson designs. While her first lesson plan on early river valley civilizations focused on group work through a jigsaw activity and limited exposure to technology, she began to experiment with developing authentic scenarios to engage students and afford them the opportunity to practice with technology. In designing a lesson about influential presidents, she "considered an open debate, however this did not seem like an activity that would be well suited for an authentic problem. The persuasive argument stuck in my mind when I thought of Time Magazine's annual Person of the Year issue." Additionally, she took this opportunity to reflect on her previous lesson plan, noting that "I think I created a 'semi-authentic problem' in my [first] lesson plan, I feel that this was the first 'authentic' authentic problem I've created in a lesson plan." By the final lesson plan, where students were developing an understanding of civic participation, Adrienne reflected on student engagement using multiple methods of interaction and utilized group instruction and activities to help students practice complex thinking to learn the content.

> I included opportunities for small group discussion, independent work or
> reflection, and whole class discussions, in order to ensure students could process
> and think deeply about the topic while also ensuring they receive the information
> they need to meet the standards and objectives.

During her course reflection, Adrienne reflected on her understanding of historical thinking skills as a way of engaging students, writing that "these skills enable students to go beyond rote memorization and truly process and make sense of the social studies content." While Adrienne expressed concern about technology leading students to be distracted and wrestled with how to engage students in course content, by the end of the course she expressed how authentic problems and thinking skills solved this challenge, because "not only will this make it easier to participate in group assignments, but also it will give students practical, real-world experience that will prepare them for higher education or a future career." Rather than trying to identify tools to keep students engaged, Adrienne wrote about how authentic problems ensured that "I have thought about all aspects of the lesson, so that it runs smoothly and helps students achieve the learning objectives. Overall, I have a greater appreciation for authentic learning and the role that technology can play in facilitating it."

During her post-course interview, Adrienne continued to explore her ability to design lessons that incorporated authentic thinking skills, reflecting that "I think it really makes a difference because it makes it more engaging for the students taking the perspective of that person or somebody that would be involved in that topic." While Adrienne began EDIT 504 wondering if direct instruction wasn't the best method for classroom practice, her perception of direct instruction changed by the end of course, stating that "before [when] putting a lesson together it was pushing things to the students and now I think I have more of an appreciation for having them really pull the information themselves and think about it in their own way."

Technology use. The final theme that emerged in the participant's data was the manner in which she approached the use of technology in her lesson designs. For Adrienne, this was not about how she used technology to make the lesson plan, but rather focused on how she thought about integrating technology into her lesson plans and how that approached shifted through her experiences in the course.

While she had no formal experience integrating technology into lesson plans prior to EDIT 504, it was an issue that she already considered, mentioning during her pre-course interview that "it's kind of hard for me to stay on top of things, these kids know the latest and greatest everyday...I would like to learn other activities, other things I can do that are gonna keep them interested." She already developed a concept of what technology in her lesson plans looked like, preferring to find ways to incorporate "group work that's not necessarily the standard what I'm used to seeing, that I can have technology where maybe they work with partners on that or the technology."

Adrienne's preconceived idea of technology's role influenced the way she wrote about it in her lesson plans, focusing not on the tool itself but how it supported the students' learning in the lesson. While researching 20th century genocides in the fourth lesson plans, Adrienne planned for students to use technology to assess multiple perspectives.

> The Penzu software will provide a medium for students to reflect on a sensitive
> issue independently. The Internet will provide students with broad sources of
> primary and secondary source information and enable them to discover multiple

perspectives and unique facts about each event, which they would not have

received in a textbook.

Similarly, in her fifth lesson plan covering civic participation, the use of technology was merely a vehicle for students to engage in complex thinking skills and was used to support student thinking and learning.

This Webquest activity will help students achieve the historical issue analysis and decision making habit of mind, because students will need to determine evaluation factors, measure individual's responses and judgments, and then decide whether the individual meets the criteria of good citizenship. Students will need to conduct historical research and analyze primary and secondary sources of information.

In her course reflection and post-course interview, Adrienne revealed that the reason she approached technology use in this manner was not due to a lack of knowledge or confidence in tool use, but a desire to ensure that she knew how to use the tools to support student learning and that if the tool failed, there would be alternative ways to teach the lesson. She expressed this in her reflection, writing that "The greatest lesson I have learned when integrating technology into lesson design is the importance of having a back-up plan if the technology fails." Additionally, she reflected on her first design experience where she was asked to use Google Earth Tour Builder to design a travel guide.

During my first design experience in this class, the Google Tour Builder software did not work on my computer. As a result, I was not able to get the same meaning

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from the activity had I been able to use the technology the way it was intended. Whenever I incorporate technology into my lesson plans, I will identify ways to work around the technology if it is not functioning properly.

She noted in her post-course interview that this wasn't necessarily a distrust of technology, rather a desire to ensure that it worked as well as a need to make sure the tool chosen supports student learning. She explained that "it's like for students you have to give them scope to that, you can't just ask them to go on Google and do research." She continued, explaining that "ensuring the technology supports the lesson in the way that I intend, I will likely achieve better outcomes than simply giving students the assignment and hoping for the best."

Impact of course design on participant learning. During the course reflection and post-course interview, participants were asked about the course structure and how it impacted their learning. Adrienne spoke at length about certain elements of the course structure, including detailed explanations of how she interpreted the structure and its impact on her ability to learn course content. Three themes emerged in Adrienne's data which were Course Design (CD), Teaching Content (TC), and Learning Activities (LA).

Course design. The first theme relating to the course structure's impact on the participant's ability to learn course content was the design of the course. This theme contained artifacts about how Adrienne felt about the arrangement of the course, the pace of progression through the course, and the repetitive design pattern used in the course to support student learning.

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Adrienne struggled with the design of EDIT 504, expressing that "I like online learning, I've taken a lot of classes online, this was the first one that it wasn't just an open ended, initiative as you go type of class, so that was a little hard for me to adjust to." Adjusting to the design of the course structure was not the only issue that Adrienne expressed with the design. In addition to the challenge of pacing, she also noted that, "Although I enjoy the convenience of online learning, I think students lose the value of engaging in a face-to-face discussion in this setting." She suggested "Perhaps a Google hangout type of setting would help students achieve this better than a forum discussion?" The repetitive design pattern used in the course structure was frustrating for Adrienne, who noted that "by the end I was just so kind of exhausted from that same thing each week, the same way."

Despite Adrienne's struggle with the course design, she still found success in the class. During the post-course interview, she noted that "I don't think I view [technology] as more important now, I think it's just as important...Umm...but again, [EDIT 504] just changed my view of how to use it." While she may have appreciated a different design of the course for her own personal approach to online learning, it did not impact her perceived ability to learn course content and engage with the material.

Teaching content. The second theme that emerged in Adrienne's data revolved around the content of the course. Teaching content emerged as a result of the participant's comments in the course reflection and post-course interview that related to how what she learned in the course impacted her future teaching career.

Adrienne developed a great appreciation and understanding of the content in
EDIT 504, explaining how the course content made her a better classroom practitioner.

> The most important attribute to being an effective social studies teacher is to
> provide students with opportunities to build and develop historical habits of mind,
> including chronological thinking, historical comprehension, historical analysis
> and interpretation, historical research capabilities and historical issue analysis and
> decision-making.

As she expanded on her understanding of historical thinking content, she also developed
"a greater appreciation for the role that authentic learning has on enabling content to
resonate with students." Engaging students was an issue that she wrestled with, and
authentic problems were a venue for alleviating this concern, noting how she would "try
to incorporate authentic learning scenarios within my classroom activities or assignments
in each lesson plan I develop."

> During the post-course interview, Adrienne noted that "originally I thought it was
gonna be like a course like 'oh, here's this tool, try this, try this tool, try this tool' and so
instead it kinda gave a context to how to apply and really use technology effectively."
This was important for her, as she reflected on the intersection between technology
integration and lesson design.

> It took it like a step further than just technology and it helped kinda create a
> context for building different assignments or activities for the classroom that
> maybe technology wouldn't necessarily have much to do with. It kind of gave me
> that lens to look at it through when designing activities and everything.

In addition to the defined course content, Adrienne noted additional benefits from the course that she found beneficial in her lesson design and future classroom preparation, explaining that "I also learned about the importance of student reflection. By having students put their thoughts into words (verbally and written), students can engage in higher levels of thinking as they process what they are learning."

   Learning Activities.   The final theme that emerged after analyzing the participant's data was how the learning activities impacted her ability to understand and engage with course content.   The learning activities comprised the course readings, discussion boards, design experiences and examples, and the lesson plans that students created.

   Adrienne reported struggling with a large portion of the learning activities in EDIT 504.   At the beginning of each module, students read a number of articles about a different historical thinking skill and discussed these readings with their groups. Adrienne felt that after the first article which introduced the thinking strand, "I understood what they were saying, so then I would read another article and be like skimming this."   Adrienne specifically recalled the analysis thinking skill readings from the second module, noting that "we had something that was basically like historical narratives and thinking and it kind of went through that skill process or method and so, it seemed a little bit redundant from what we had already done."

   After the readings, students engaged in discussions with three other group members, and Adrienne felt that these were her biggest struggle.

the other was that the discussion board umm...having it be the only the three or four of us, that started to get really tiresome and it was like 'why can't we just talk with all of the social studies students' and at that point you know...umm...like [Name Redacted] have all of our classes together, so we would just be like 'great, I agree with you, uh huh', so that was really the only thing that...but its hard in an online class to get that discussion to begin with.

Adrienne noted that she understood the point of having the discussions, but wished that these discussions were open for "other content areas...it'd almost be interesting to see what the other content areas have...just to see what they're talking about and what they're doing...it's interesting to hear what is going on in the other content areas."

After the discussions, students completed a design experience. In the first design experience, "the Google Tour Builder software did not work on my computer. As a result, I was not able to get the same meaning from the activity had I been able to use the technology the way it was intended." However, rather than let this incident ruin her experience, she noted that it was a learning opportunity, reflecting that, "Whenever I incorporate technology into my lesson plans, I will identify ways to work around the technology if it is not functioning properly." This failure turned into a positive learning experience for Adrienne, and she reflected on the design experiences as a whole that "I got more out of that because it got me thinking like a student would be thinking, so then I would, like, what would a teacher need to do to guide them along so that they would do that thinking."

In addition to the value inherent in the design experiences, Adrienne found the lesson plan activities to be extremely valuable. She believed that "[lesson planning] was the most valuable part of the course to me." In addition to appreciating the experience of designing lessons, she also noted that "I'll say too...begrudgingly like...was that you gave different classes and topics and standards...so it was good to get more practice." She felt that the value in the lesson design process was that "it forced me to look at the other areas that aren't my first choice."

Summary. Despite Adrienne's struggle with the course structure, she expressed a positive experience with her time in EDIT 504. While her progress through the course and learning activities might not have been the most positive experience, she developed a complex understanding and appreciation for authentic lesson plans that engage students in historical thinking skills. Additionally, she developed a recognition for technology that was not based on bringing in tools for the sake of their existence, but thoughtfully designed lessons that incorporated technology to help engage students in the complex thinking skills needed to solve the authentic problems she designed. She retained her positive attitudes and beliefs about technology's role in schools and the social studies classroom while enhancing her ability to design lesson plans that incorporate authentic thinking skills to help maintain student engagement.

Case Study 5

Biography. The fifth case study followed the story of Nicole, a 23 year-old graduate student in EDIT 504. Nicole started her graduate degree immediately after finishing her undergraduate program and was a product of a local school district. Prior to

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EDIT 504, she had completed both of her methodology courses for her education degree. Her age and experiences define her as a digital native. Nicole had frequent exposure to digital tools in her personal life and in the K-12 classroom. While Nicole had never been employed as a full-time teacher, she had experience with substitute teaching in local schools. She viewed these experiences as extremely positive and offered her the opportunity to see the different types of technology available to teachers in the classroom. Unfortunately, she did not have a lot of opportunities to substitute in social studies classrooms. Upon completion of EDIT 504, Nicole prepared for her teaching internship in the Fall of 2014 in addition to the final two elective courses she was required to complete in order to finish her degree.

General attitudes and beliefs about technology in education. The M-TPCK Survey showed how Nicole processed what she had learned in the course and how it impacted her general beliefs about technology in schools. Of the 12 statements, only four of these statements changed at all, but interestingly all four of these statements decreased from agree to neutral. Additionally, Nicole reported this decrease in four statements that all related to her belief in her own ability to use technology to support general classroom instruction and student engagement. The results of the survey are summarized in Table 10.

Table 10

Nicole's Results on Pre-Course and Post-Course M-TPCK Survey General TPCK

M-TPCK Statement	Pre-Course	Post-Course
I know how to solve my own technical problems.	N	N
I can learn technology easily.	N	N
I keep up with important new technologies.	N	N
I frequently play around with the technology.	N	N
I know about a lot of different technologies.	D	D
I have the technical skills I need to use technology.	N	N
I have had sufficient opportunities to work with different technologies.	N	N
I can choose technologies that enhance the teaching approaches for a lesson.	A	N
I can choose technologies that enhance students' learning for a lesson.	A	N
My teacher education program has caused me to think more deeply about how technology could influence the teaching approaches I use in my classroom.	A	A
I can adapt the use of the technologies that I am learning about to different teaching activities	A	N
I can choose technologies that enhance the content for a lesson.	A	N

Note. SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

These results indicated that while Nicole did not feel her individual perception of technology, pedagogy, or content knowledge changed as a results of EDIT 504, she indicated a shift in her belief of her ability to integrate technology to support pedagogical approaches and comprehension of content knowledge in the classroom. The data from Nicole's pre-course and post-course interviews, her five lesson plans and their reflections, and her course reflection provided additional insight into Nicole. During the pre-course interview, Nicole was unable to meet for a face-to-face conversation, so we

conducted a synchronous interview using Skype. While the digital recorder was setup

correctly, a firewall prevented the audio from recording correctly. Despite attempts to

recover the file, the recording of the interview was lost. To rectify this missing piece of

data, I immediately took extensive field notes on our conversation to recall as much

information about Nicole as possible. The themes that emerged from Nicole's data were

Personal Foundation (PF), Learning (L), Comfort (COM), and Overall Positive (POS).

Personal Foundation. A major theme that emerged from Nicole's pre-course

interview was the experiences that led to the creation of her personal foundation about

technology. These experiences were expressed during the pre-course interview and were

a combination of personal and educational exposure to technology and reflected her

general attitudes and beliefs about technology prior to the start of EDIT 504.

Nicole was a heavy user of technology, relying on her laptop to get all of her

information. Whether she was reading the news, researching for class projects, or

keeping in touch with friends and family through social media, Nicole expressed that she

used her laptop for everything and could not have imagined having to work without

access to the device. Additionally, Nicole relied on her smartphone as a backup device,

using the various apps and tools available to continue gathering information, but she did

express how much she needed her laptop to conduct most of her work and

communication.

When asked where this need to use her laptop came from, Nicole responded that it

was just how she had always been. She reflected on her childhood, remembering that she

had always been around technology and she was always exposed to it throughout her

youth. As a result of this exposure, she disliked paper-based reading, preferring to use a digital device for reading and information gathering. She also noted that she disliked taking notes by hand and preferred to use a digital interface to record information. She explained that this attitude developed in college.

Despite her personal interactions with technology, in her K-12 experience she only recalled using technology in the mandatory information systems class in high school where she learned to type and use basic office tools and programs. Even with the limited interaction in her K-12 learning, she developed a strong belief in the power of technology to support her lifestyle that she brought with her into EDIT 504.

Learning. In her pre-course interview, Nicole expressed how she viewed technology's role in supporting her learning. In addition to her outlook prior to the course, she reflected on some of her experiences during the post-course interview, further explaining her attitudes about technology as a learning tool. These reflections were focused on how technology impacted Nicole and did not indicate her views on technology as a tool used to support student learning.

During the pre-course interview, Nicole expressed her frustration with the way technology was used in her own experiences as a student. While she learned various tools in her business class such as Microsoft Excel and played an investment game in her finance class, she had little to no exposure to technology as a learning tool in her general education courses. This frustrated Nicole, especially since she remembered having to use textbooks in classes rather than doing web-based research or watching videos on a subject.

During the post-course interview, Nicole continued to explore the foundation of her attitudes and beliefs about technology as a learning tool. She specifically recalled her observations of elementary school students who were engaged in game play and videos whereas in her observation of high school classrooms, students' interaction with technology was extremely limited, usually with students developing a presentation. Additionally, Nicole recalled from her own secondary experiences that "If anything, it was a group activity and it wasn't anything...it was just kind of...I felt like the way the teacher approached it was like 'Hey try this out.'" Prior to EDIT 504, she wasn't exposed to technology that was supportive of student learning, rather as an afterthought in a lesson.

Comfort. One unique theme that emerged from Nicole's experiences was the concept of comfort about the use of technology. Based on her reflections and expressions, part of what influenced Nicole's attitudes and beliefs about the use of technology was her comfort with a tool and whether or not she felt she could be successful using that tool.

During the pre-course interview, Nicole noted many times how her comfort with technology impacted the use of and her attitude about a specific tool. She first explained how she developed comfort and expertise with a tool through practice. However, if asked to use and integrate a tool without that initial exposure and practice, she was nervous and lost confidence in her own abilities to use technology. She recalled during one of her substitute teaching experiences where she was asked to use a program without having any experience with it. It made her very uncomfortable in front of students.

At the conclusion of EDIT 504, Nicole reflected on this attitude about technology, recognizing that "there isn't' just one way to teach with technology and it helps with the development of lessons." After a semester of learning various tools to support student learning and exposure to different instructional approaches, Nicole expressed an open attitude about integrating technology and its role in the classroom. She further explored her own idea of comfort with technology during the post-course interview, stating that "I actually haven't really...especially with this course and all the activities we did...I had never done before."

Her lack of familiarity with the tools decreased her own confidence in her ability to integrate technology, but helped raise her own awareness of how much her comfort and experience with tools impacted her ability to use technology in the classroom. She clearly explained how she wrestled with comfort when she reflected on the struggle she had analyzing the design experiences, noting that "I feel like if I had done it before, I'd be like 'Oh, I remember doing this before, now I wanna see...' and kind of put the grad student mind in it." Her own comfort with the technology limited her ability to analyze the technology's role in the activity.

Overall Positive. The final theme that emerged for Nicole as an overall positive attitude about technology and its role in the classroom. This theme is a collection of extremely positive attitudes and beliefs about technology and how open she was about the idea of integrating technology into schools. Despite the lack of exposure as a secondary student and her need to develop familiarity with a tool before comfortably

using the tool, Nicole continued to express an extremely positive attitude about the role technology played in education.

During the pre-course interview, Nicole maintained a positive attitude about technology, whether for personal use or in education. She noted just how important she felt technology was, stating that she saw it everywhere and that it has had a huge impact on the way we live our lives. Additionally, she was amazed by how much students want to use technology and the excitement they expressed at the idea of being able to get their hands on various tools.

In addition to her positive views about technology, Nicole expressed that negative elements of technology could be embraced and used to positively influence classroom instruction. She mentioned that in her substitute teaching experiences, students could use their cell phones and she perceived that this approach created a respectful attitude in the classroom where students still paid attention and only used the phones when it was appropriate. She felt that embracing students' motivation to interact with technology helped maintain that respectful atmosphere in her class.

During her course reflection, Nicole maintained her positive attitudes and beliefs about technology. She reflected that "I learned teaching with technology is beneficial for the students and the teacher." Regardless of any challenges she had in EDIT 504, she maintained her belief that "Technology also is helpful for keeping students interested since they relate and are used to technology." She expressed her belief that technology was a tool that can engaged and maintained the students' participation in schools.

Attitudes and beliefs about technology in support of social studies learning.

Of the nine statements about social studies pedagogy, content knowledge, and technology

on the M-TPCK Survey, Nicole reported a change in every single statement. Not only

did she report a change in each of the nine statements, but she reported a one point drop

in every one of the statements from agree to neutral, indicating a large amount of change

in the way she perceived her own attitudes and beliefs about technology, pedagogy, and

content knowledge in social studies instruction. The results of Nicole's survey are

summarized in Table 11.

Table 11

Nicole's Results on Pre-Course and Post-Course M-TPCK Survey Social Studies TPCK

M-TPCK Statement	Pre-Course	Post-Course
I have sufficient knowledge about social studies.	A	N
I can use a historical way of thinking.	A	N
I have various ways and strategies of developing my understanding of social studies.	A	N
I can select effective teaching approaches to guide student thinking and learning in social studies.	A	N
I know about technologies that I can use for understanding and doing social studies.	A	N
I am thinking critically about how to use technology in my classroom.	A	N
I can teach lessons that appropriately combine social studies, technologies, and teaching approaches.	A	N
I can select technologies to use in my classroom that enhance what I teach, how I teach, and what students learn.	A	N
I can use strategies that combine content, technologies, and teaching approaches that I learned about in my coursework in my classroom.	A	N

Note. SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

The results of Nicole's survey indicated that she was challenged by the course

material and felt that it greatly impacted her attitudes and beliefs about technology and

social studies instruction. Her interviews, lesson plans, and reflection were

decontextualized into statements reflecting her attitudes and beliefs about technology in

social studies teaching and learning. Two themes that emerged from her statements

which were Technology and Student Engagement (TSE) and Technology and Future

Instruction (TFI).

Technology and student engagement. This theme emerged as an expression of Nicole's belief of technology's ability to grab students' attention, maintain their attention throughout a lesson, and keep them interested in the content. While this theme started as a vague understanding of how technology might support Nicole's instruction, it culminated with Nicole believing in the power technology had to support her instruction while she remained unsure of how to successfully incorporate tools.

During the pre-course interview, Nicole spoke frequently about her desire to find, learn, and integrate tools into her classroom to support student learning. She saw her classroom as a place where students could use technology for research, watch videos, or conduct group activities. She based this in part on her experiences as a substitute where students were allowed to use their cell phones to support their learning. She reflected that these devices engaged the students in the classroom rather than distracted them.

Nicole also mentioned during her pre-course interview how she based her attitudes and beliefs about the use of technology to engage students on her own understanding of social studies content and technology. She reflected on her own gap in understanding, mentioning that her geographic skills and ability to use maps were subpar. She noted that in order to support her own limitations in her social studies content knowledge, she used map programs to help fill in the gaps of her own understanding. Additionally, part of her drive to take EDIT 504 was to find tools that could be used to engage students rather than technology that just forced students to fill in the blanks and complete worksheets.

As she progressed through EDIT 504, Nicole created a number of lesson plans that asked student to utilize various technology tools to engage them in the social studies content. However, this process of integration and engagement was built over numerous lessons. In her first lesson plan, Nicole had students complete a jigsaw activity where students presented information about an early river valley civilization while other students completed a fill-in-the-blank packet. She explained that "the technology was integrated to help students with research skills and to develop a presentation." While she expressed a desire to engage students in using technology and to avoid fill-in-the-blank lessons during her pre-course interview, she fell back into this standard method of instruction in her own initial lesson plan.

However, as Nicole progressed through the course, she developed an understanding of how the affordances of various technology tools could support student thinking and learning in the social studies. For her third lesson plan, students developed a budget proposal to a school board in order to eliminate activities fees for students. In this lesson, she described how students used technology and, more importantly, how the technology engaged them in complex thinking.

> Students will use technology by researching on how to create a successful budget for the school board. They will use Microsoft Excel to help organize their budget in a spreadsheet and practice the skills they have learned previously by analyzing information and creating their own budget.

She developed an understanding of how her use of technology was responsible for engaging students in course content and thinking skills.

By the end of EDIT 504, Nicole continued to stress the importance of student engagement, noting in her course reflection that EDIT 504 "influenced my understanding of technology integration in social studies classrooms by expanding my knowledge of how to incorporate different activities in the classroom that will keep the students interested while still challenging them." During the post-course interview, she continued to stress her belief that technology played a role in engaging students in social studies content, stating that "after this course I really thought it was so much more useful to use technology where you can kind of...teach the same thing but in a way that [students] would stay interested."

Finally, Nicole reflected on the challenges she had integrating tools to engage students, explaining in her post-course interview about her lesson design and technology integration that "I was frustrated on one section where I couldn't figure out a good activity but I knew the concept, I would at least think 'ok, what can I evaluate them on,' I would go to different sections I guess." Despite struggling to find an activity that integrated technology to engage students, she began to think about the possibility of incorporating technology to engage students in different elements of the lesson plan. She recognized by the end of EDIT 504 that "there's definitely a lot of technology that can be used, even if it's not the main activity, like a warm-up or something, or the homework."

Technology and future instruction. The second theme that emerged for Nicole was how her attitudes and beliefs about technology influenced her idea of what her future classroom would look like. Additionally, this theme covered ideas expressed by Nicole that indicated her belief in her ability to think beyond her own experiences and her own

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understanding of technology. This theme was a complex one that encompassed the challenges Nicole had comparing the content from the course with her own limited experience with technology integration in the classroom.

Prior to EDIT 504, Nicole expressed a very vague but excited approach about technology integration in her future classrooms. She pictured a classroom where information was learned visually, especially using videos to reinforce history instruction. When I asked her about the motivation to use technology to support a visual approach to history, she noted that this attitude came from her belief that students learn history better through images similar to the way she learned history.

While her initial belief about technology's role in her future instruction was based on introducing visuals to support social studies content, she expressed an awareness that students learn in different ways and she had an open attitude about learning about these different approaches to technology integration. Additionally, she expressed a desire to learn how technology could be integrated to support learning rather than just learning about specific tools. Nicole entered EDIT 504 excited to learn about technology integration and how it would impact her future instruction in the social studies classroom.

At the conclusion of the course, Nicole continued her reflections on her future practice, assessing where she began and how she developed as a result of the course.

[EDIT 504] influenced my understanding of technology integration in Social Studies classrooms by considering more than just teaching the content. It is important to understand the "why" and the "so what" of the historical content.

Analyzing historical events and creating something of your own will allow for a

better understanding of the material.

Rather than perceiving her future instruction as integrating technology to bring in images,

she developed a complex understanding of social studies instruction and the need to use

technology to support complex thinking skills. While Nicole's lack of experience in the

classroom limited her ability to develop concrete thoughts and ideas on how to integrate

technology, she recognized the need to continue developing an understanding of

technology and social studies instruction, noting that "I plan to use what I learned on a

regular basis and continue to learn new information about incorporating technology in the

classroom."

During the post-course interview, Nicole spent a lot of time focused on how the

course would influence her future instruction and practice as a social studies teacher. She

noted that "I found myself saving and writing notes about everything so I could just

remember because it was very helpful information." Her open attitude about classroom

practice meant that while she lacked concrete experience to draw connections to, she

recognized the need to absorb information and begin planning for her future classrooms.

The content wasn't like...something that I've never heard of before which helped.

But umm...I loved the way that we had to do it made sense of the concepts we

were trying to...that we were learning about. It was very helpful and I would make

notes about "I definitely want to use this activity with my students in the

future"....you know...I would....umm...consider everything that every activity we

did, I would use.

Nicole additionally noted how the design examples, which told the story of how a teacher would approach selecting a tool and designing a lesson, were extremely useful to her, "Those were actually probably my favorite part of each module because...like I said...it was kind of giving me an example and kind of helping me understand the concept, like this is how the teacher approached it in a lesson." While Nicole was not able to explore how the tools in the examples might be applied to improve student outcomes or inform her planning in a specific topic, she recognized the need for her to consider her own potential instruction and the need to prepare for future classroom practice.

Ability to design technology integrated lessons to teach social studies. In order to fully understand how Nicole's ability to design technology integrated lessons changed through EDIT 504, a number of her artifacts were analyzed to understand her thinking. The first source of data was the results of Nicole's lesson plans.

Throughout EDIT 504, Nicole struggled when designing her lessons. For each mistake she made in one lesson plan, she proceeded to fix her mistake in the following lesson, leading to the creation of a new mistake in a previously well-addressed area. For example, in her fourth lesson plan, where she required students to develop presentations on the Holocaust, she clearly explained how and why she included various technologies to support student thinking. However, in her fifth lesson plan, she failed include any explanation or reasoning for the integrated tools, forgetting to explain why the affordances of her tools support the thinking of students who were developing a community support plan. This struggle between maintaining success while improving on

weaknesses plagued Nicole in her lessons and explained why her lesson plan scores vary

so drastically.   The results of Nicole's lesson plans are summarized in Figure 7.
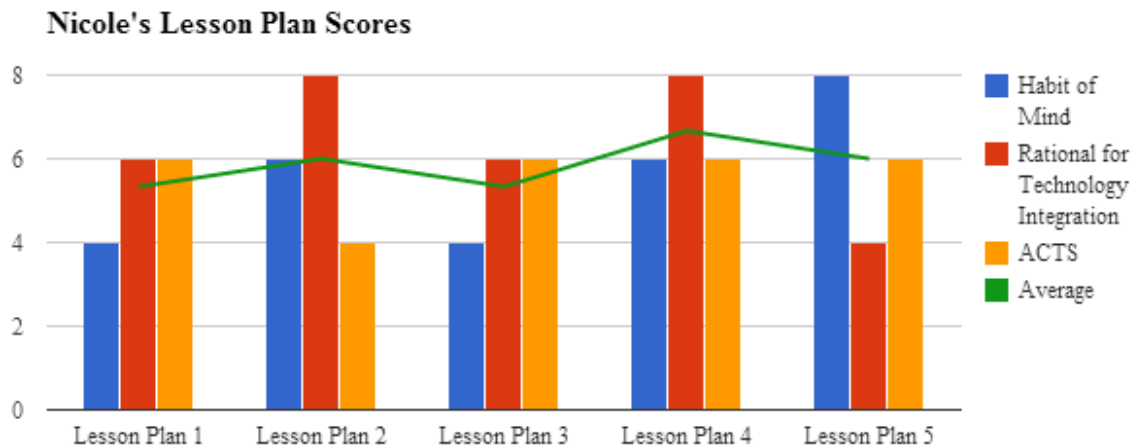
Figure 7. Nicole's Lesson Plan Scores and Averages

Nicole's pre-course and post-course interviews, lesson plans and lesson plan

reflections, and course reflection were analyzed and coded for statements that reflected

her evolving ability to design technology integrated lessons. In the course of analyzing

her artifacts, four major themes emerged as being particularly reflective of Nicole's

evolving abilities.   These themes were Social Studies Goals (SSG), Authentic Thinking

Skills (ATS), Technology Use (TU), and Experience (EXP).

Social studies goals. The first theme that emerged from Nicole's data was the

way she incorporated and designed around the social studies content goals necessary for

the lesson. This theme was initially expressed by Nicole in her lesson plan reflections as she was challenged to identify lesson goals and evolved as she progressed through the course, culminating with her own self-awareness of how she struggled and succeeded.

In her first lesson plan, Nicole tasked students with completing a jigsaw activity about early river valley civilizations. In her lesson plan reflection, she noted the struggles she had, writing that "While developing this lesson plan, I initially had trouble figuring out an effective lesson that integrates technology while successfully conveying the content." She continued to wrestle with integrating technology to support the learning of the selected content in the second lesson plan, where students were assigned a research project on various American presidents. In her reflection, she noted that "While developing this lesson plan, I had a difficult time figuring out when this lesson would take place chronologically so it does not necessarily relate to a time period but more on United States presidents over time." Though the specific reasons varied, she struggled to incorporate the concept of authentic learning and supportive technology into a pre-determined social studies content area.

In her fourth lesson plan, a lesson focused on the genocides of the 20th century, Nicole expressed a shift in her design process, using her own experiences to help influence her use of the social studies goals. She recalled that "Based on the content subject, my first thought was when I visited the Holocaust Memorial Museum in Washington D.C. for a workshop for a graduate school course. We practiced different lessons we could use to teach the Holocaust." By drawing a connection to her own experiences and topics with which she was familiar, Nicole developed her strongest

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lesson of the course. She worked to keep the activity interesting and engaging for students where they could use "higher-order critical thinking skills by reflecting on their own obligations and by identifying effective methods for presenting information." She put the responsibility for learning in their hands to engage them in the content and ensured her students achieved the content objectives.

In her course reflection, Nicole noted her own challenges, writing that "I did struggle some this course developing the lessons and making sure I mastered the different lesson elements and accomplishing the main goal." However, she also recognized her developing understanding of maintaining and meeting the social studies goals in designing a lesson by engaging students, reflecting that "To be an effective Social Studies teacher and learner, it is important to differentiate and teach the content while still keeping it interesting." During the post-course interview, Nicole recognized her limitations and expressed how her own limited understanding of social studies content and various learning goals limited her ability to design for students.

> I had the most difficult time putting my mind as a high school student, I guess
> mainly because it has been a long time since I had researched historical...I know
> that sounds terrible because I love history, but with grad school there isn't much
> learning content, it's just applying what you know, or you know, briefing a little
> bit on this and that, so that I was just kind of like "OH man, I have to research all
> this stuff on the silk road" you know...that was the only thing I had a challenge
> with, but it wasn't terrible.

Authentic thinking skills. Authentic thinking skills was a theme that

encompassed the participant's ability to design lessons that asked students to solve a

complex problem faced by a practitioner where the use of historical thinking skills were

necessary to solve that problem. This is a concept that Nicole embraced from the very

first lesson plan but recognized that by course end, her skill in developing authentic

challenges continued to be a work in progress.

Nicole immediately attempted to engage students in authentic thinking skills,

reflecting in her first lesson plan that "After I developed the lesson plan, I enjoyed

connecting the ACTS for the lesson and what will benefit the students." While she was

excited by the concept of authentic challenges, she struggled to create truly authentic

scenarios for students, asking her students in the first lesson to "develop an appropriate

presentation so the rest of the class can write down the correct information on the

civilization. Also focusing on how to work together will help with the success of the

presentation and research of the content."

As she progressed through the course, her ability to design authentic problems

showed signs of improvement, which she displayed in her third lesson plan where

students developed a school budget presentation for the school board, "Critical thinking

and utilizing design skills will enhance their comprehension of the data. By using their

research skills, they will be able to create their own product that is organized and develop

a successful budget for the School Board." By her final lesson plan, students created

proposals on how they could solve problems in their community to learn about civic

responsibility. As she reflected on the lesson plan, she noted that students, "Based on the

content they learned related to civic duty, they could research and develop a proposal to help their local community they shows they are honest, responsible and respect citizens." She explored the thinking that students would be engaged in, noting that "Based on the objectives, I think a realistic scenario where they help their community would benefit them and allow them to critically think and decide how they would show good citizenship."

During the post-course interview, Nicole was very self-reflective, noting that by the end of the course "I felt like I considered more than what I used to. You know, I kind of would create an activity and just not really think 'Ok, are they really getting anything from this?'" She developed a belief that by creating an authentic scenario that engaged students in complex thinking skills, her lessons would have value for students. This process was not automatic and Nicole was very critical of her ability to design authentic lessons successfully.

> Whenever I developed...just because I would write little notes here and there on
> what I wanted them to accomplish or maybe the problem and I learned through
> feedback and experience, the authentic problem was probably my biggest issue.
> Umm...but over time I kind of...I'm starting to get it more and more, but I feel like
> every time I developed a lesson, I was like "do I need to say it differently?", so I
> feel like that was my endpoint every time just to make sure.

Nicole believed heavily in making sure that lessons were beneficial for students, developing experiences that were authentic and engaging for students to ensure that they interacted with the material successfully.

Definitely looking at different examples. I know with the one...the Holocaust one...for some reason that was one of the easier ones because I liked what I saw from my experience at the museum...umm...so I guess when it came to the frustration, I mainly was frustrated with making sure the activity was actually going to benefit the students while I still used technology.

Nicole worked to develop a stronger ability to create authentic learning environments that engaged students in complex thinking, noting that "I said 'Ok, it's ok to do a scenario'...I guess I had never...yeah...so I liked that it did that because I feel like it gives them either a realistic scenario or a what if scenario, and I just...and now I get it." Examining her muddled thoughts revealed that Nicole continued to wrestle with developing these authentic lesson designs, hoping to engage her students.

Technology use. Technology use was a theme that indicated how Nicole incorporated technology to support the authentic thinking skills needed to engage students in social studies content in her lesson design. Confidence over technology tools was a major theme expressed by Nicole as influential over her attitudes and beliefs about technology, and the confidence over specific tools influenced the technology use in her lesson designs.

In her first lesson reflection, Nicole noted that "I thought the lesson worked for what I wanted to accomplish but there may be better ways to integrate technology." Immediately, she believed that her ability to successfully integrate technology and use it to support student learning was limited. This limit was influenced by her own

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confidence, as she noted in her reflection of her second lesson plan where students created Wiki pages exploring American presidents and leaders.

> I have used Wiki pages several times in high school and college and thought this was a good lesson to have students submit their work on a Wiki page for everyone in the class to view their paper and see the different perspectives of each student.

During the post-course interview, Nicole continued to express her challenges with designing technology integrated lessons that supported authentic thinking and student engagement.

> Definitely, yeah...ummm...I mean I kind of had a good idea, but I had never really created a lesson with technology being the main point I guess...ummm...and so that was definitely something I wasn't used to where I had to make sure that I incorporated technology where I was still accomplishing my goal or the objective of the lesson, I can't just throw something in there and hope it works, so that was definitely interesting

As she reflected on her lesson design, her confidence over various tools and affordances influenced her ability to design lessons, noting that "I guess I wasn't so used to seeing technology in different ways where you can teach them the same material and you have all this different...these different ways you can do it." Nicole continued to wrestle with incorporating technology and recognized that her confidence and exposure to technology integration influenced her ability to design lessons, stating that "Mainly with the lesson planning. I felt like I really wasn't focusing like I should so now I feel more prepared to consider what we worked on, and also the resources, I have so many more resources than

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before." With this renewed attitude, Nicole looked about her future in the classroom, aware of her own limitations but willing to incorporate what she had learned into her future practice.

Experience. An overarching theme that was expressed by Nicole in the pre-course and post-course interview was how her experience in planning lessons influenced her approach to designing lessons in EDIT 504 and thinking about the future of her lesson design. As with her confidence over technology tools, Nicole expressed how important her own experiences with lesson design were in controlling her ability to design technology integrated lessons in the social studies.

During the pre-course interview, Nicole stressed how important it was that she followed her lesson planning process. She stressed that her lessons must contain a warm up, direct instruction, an activity, and feedback or an exit ticket. As she explained her process, she noted that she didn't want every lesson to be the same, so while each lesson had to have a warm up, direct instruction, and an exit ticket, she liked to mix-up the middle of the lesson so it was not always the same thing. Finally, Nicole explained multiple times how the most important element of her lesson was how she received feedback from the students to make sure they understood the content and that they enjoyed the lesson.

By the end of the course, Nicole recognized her own limited experience and perception of successful lesson design, reflecting that her biggest struggle was "definitely lack of experience. I mean, I never....I've created lesson plans with courses, but I've never...it was just kind of we created it and....kind of a pretend lifestyle and never really

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acted on it." As she progressed through the course and gained experience with lesson design, she recognized that her previous lesson planning process was limited.

> I think I just did it to do the assignment in a way. And with this, from your feedback and everything from each one, I was like "Ok, I need to consider are they going to get anything", you know, so it was definitely...but it was a good way of challenging me.

As she reflected on her own lessons and the challenges she encountered, she recognized that her lesson design process was evolving and her ability to design lessons had to improve by experiencing in-depth critique of her lessons.

> Definitely just the individual comments for each section really helped in showing where my weaknesses were and also just kind of suggestions which were really good, because it's just kind of one of those, where, if you say, "Ok, you need to work on this", I would have been like "what?", so it's nice to have "You need to work on this based on considering these factors" so…

Her lack of experience created a defined process to lesson planning that Nicole recognized as limiting her ability to design successful lessons. She recognized flaws in her own approach and reacted to constructive feedback to improve her own lesson design process.

Impact of course design on participant learning. As part of the reflective process, participants were asked to provide feedback about the course structure and how it impacted their ability to learn about designing lessons that incorporated technology to support authentic thinking skills in the social studies classroom. After Nicole's course

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reflection and post-course interview were analyzed, three important themes emerged as influential over her ability to learn in EDIT 504. Those themes were Course Design (CD), Teaching Content (TC), and Learning Activities (LA).

Course design. The first theme that emerged from Nicole's data was how impactful the design of the course was over her learning of course material. This theme included how the arrangement of course material, how she progressed through the course, and how that physical design all impacted her learning.

Nicole reflected that EDIT 504 pushed her farther than she thought possible and challenged her to engage in content she thought she already knew in ways that engaged her more than she realized was possible.

> No, I was...like I said, I was definitely surprised by how much I actually did. It kind of...umm...kind of took me back, if that makes sense, where I thought I knew more than I really did, so it kind of checked me a little, where I was like "no, I didn't know this very well", but it was helpful. It...I feel like it was one of the online classes where I really used the resources and held on to them knowing I was going to use them in the future, as a teacher, I could see using anything that was in the course.

Not only was EDIT 504 a challenge for Nicole, but the design of the course was a learning experience itself as she recognized the structure and presentation of the course could provide her future lesson and classroom ideas.

> They definitely...umm...actually went above what I expected. Umm...I mean I mainly went in to learn different teaching strategies using technology and also

because I wasn't sure how to incorporate it into social studies and just with the

modules alone it gave you several examples of how you could do it and give you

the ideas that you could just take for your own...umm...so it was very helpful.

Additionally, the repetitive design pattern helped to support Nicole's learning since she

knew what to expect from the course and focused on learning new content rather than a

new learning structure each module.

Yeah, definitely, cuz it was kind of, we did the same activities or like assignments

using that historical concept in mind, so it was just kind of even if we were used

to how it went, I would have a whole new topic to think about. Umm...so that was

helpful...and it kind of showed how you could use technology using each concept.

Nicole expressed one specific issue with the course design during the post-course

reflection. She noted that due to the structure of the course in the learning management

system, she would often get lost or confused as to where or when to submit assignments.

Umm...I guess...I mean I'm used to Blackboard, but some of the times I would

forget where things were and I actually didn't even realize until halfway through

that I was supposed to submit those...and I hope that's ok...but I would

automatically go to putting it on the archives and I completely forgot to submit it

as an actual assignment.

Even with this challenge, Nicole felt that the design of the course was extremely

beneficial to the way she learned and the design helped her to learn the complex material

of EDIT 504.

Teaching content. The second theme that emerged from Nicole's artifacts focused on the content of the course and how useful she found the content for informing her future career as a social studies educator. This theme revolved around Nicole's understanding and agreement with the concepts of ACTS, historical thinking, and the use of affordances to appropriately select technology.

Similar to her experience designing lessons and her confidence with technology tools, understanding the content of the course was directly impacted by Nicole's familiarity with the course content prior to taking EDIT 504.

> I struggled a little. But also, with the ACTS, I had never actually heard of it until the course, so when we had the actual kind of....umm...first four modules where we learned about them and everything, I remember looking back so many times because I just had....had some problems, but that actually helped me keep my check, making sure...ok, did I hit all four....and everything like that.

Despite this initial struggle, the content of the course pushed Nicole's thinking about classroom instruction and lesson design, as she noted that "the strategies that we learned like with the ACTS and the....learning...umm...what I got as a whole from that...is mainly different strategies to kind of think of rather than just throwing the content out there."

In addition to using the ACTS framework to design lessons, she developed an understanding of "one that I really got from was kind of the historical thinking, like I knew a lot about it, but just how to teach it was something that I learned a lot from the reading in that section." Nicole expressed a belief that technology could support historical thinking, which would support her use of the ACTS framework in lesson

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design. Additionally, Nicole was surprised by the variety of technology tools used in the course, noting that "it didn't really occur to me how creative [technology] could be with the social studies. A lot of what we did was very creative."

Learning activities. The final theme that emerged was the learning activities that students were engaged in throughout EDIT 504. This theme included her reflections on the readings and discussion board activities, the design experiences and examples, and the lesson design practice.

Each module began with multiple reading assignments that introduced the historical thinking concept that framed each module. Nicole found these readings to be "really helpful and I liked that they weren't that long. Like I said, I like it when things are to the point and the examples with some of them were great." At the end of each reading, students were asked to engage in a group discussion about the readings and their experiences as K-12 students. Nicole felt that her own experiences were so limited, it impacted her ability to add what she believed to be sufficient information to the discussions, but enjoyed reading other discussions left by group members.

> Yeah...I noticed I didn't expand as much from my own...but I liked reading back
> on everyone else's comments and what they got from it, because then I would see
> their opinion and not even like...I didn't even think of it that way or something
> like that...I umm...I felt like it benefited me more reading everyone...all the other
> discussion topic...their discussion posts...but uh....I felt like for mine, I don't
> know...I sometimes had...I felt like I didn't write enough sometimes, but I guess if
> I got the point across..

After the readings and discussions, students were asked to participate in a design experience and read three design examples. Nicole found this process to be "very beneficial and helped with my understanding of different technological programs and how to use it in the classroom." Nicole struggled throughout the course with her limited experience of various tools, so she appreciated the experiences and examples because "I guess with all those technologies mentioned and how they used it, it helped me consider more than just these two different technologies or something. Yeah, it kind of gave it more broad of a spectrum." In addition to giving her the chance to learn specific tools, Nicole also relished the experiences and examples as they showed her what integrating technology looked like in practice.

> Yeah, I loved those. Those were actually probably my favorite part of each module because...like I said...it was kind of giving me an example and kind of helping me understand the concept, like this is how the teacher approached it in a lesson...um...I read every single one, I wrote notes about it, just because those were really helpful. It's nice to see...it's kind of like when we're observing, it's nice to see it in action, in practice.

At the end of each module, students were tasked with designing a lesson around a predetermined Standards of Learning strand across various social studies content areas. Nicole struggled with these lessons because "I mean I kind of had a good idea, but I had never really created a lesson with technology being the main point I guess...ummm...and so that was definitely something I wasn't used to." Nicole's lack of experience challenged her to design lessons and pushed her thinking, which she thought "was

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challenging, so sometimes there was frustration, sometimes I don't even know...I would struggle...but it was something that was beneficial, because I was actually learning the concept which was good." Despite the challenge, the lesson design activity helped her to develop her understanding of the course material and succeed in EDIT 504.

Summary. Nicole entered EDIT 504 with an open and positive attitude about the role technology could play in schools and classrooms. She started EDIT 504 with the belief that technology in schools was an exciting opportunity and challenged her own beliefs about how technology could support social studies instruction and her own experience designing lesson plans. While her lack of personal teaching experience limited her ability to develop concrete attitudes and beliefs about technology's role in social studies instruction, she nevertheless wrestled with the future role that technology would play in her own instruction and classroom. In addition to challenging her attitudes and beliefs about technology, EDIT 504 pushed Nicole's ability to design lesson plans and forced her to think beyond a pre-constructed lesson planning approach that was rigid and exposed her lack of experience. During her time in EDIT 504, her ability to design lessons evolved and she recognized that many of the concepts from the course would influence her lesson planning as she improved her ability to design lessons. Finally, Nicole found the structure of EDIT 504 to be extremely helpful in challenging her assumptions about social studies instruction and improved her ability to engage her students in her future social studies classroom.

Exploratory Case Studies Summary

Five participants explored their attitudes and beliefs towards technology in general and as it supports social studies instruction, their ability to design technology integrated lessons, and their interactions with the course structure in which they participated. Participants' feedback was collected through a pre-course and post-course survey, lesson designs and reflections, a course reflection, and pre-course and post-course interviews. These data sets were analyzed and examined to create each exploratory case study. Participants' experiences were as unique as the participants themselves, but each exploratory case study revealed common themes that emerged across all participants that were examined in a cross case analysis.

CHAPTER FIVE

The goal of chapter five was to develop a cross-case analysis of the five case studies in relation to the four research questions for the study. Using a cross-case analysis, I examined the emergent themes from each case in relation to one another, analyzing similarities and differences between participants' experiences throughout EDIT 504. By examining the five cases collectively based on their relation to each research question, I was able to further understand the collective experience of participants in the course and evaluate specific elements of the course.

The experiences of the five participants were examined using the emergent themes established in the exploratory case studies and are summarized by research question below. While participants professional experience had no obvious influence in the individual case studies, during the cross-case analysis, it was apparent that their professional expertise impacted their progress throughout EDIT 504. Three of the participants, Mort, Heather, and Adrienne, were career switchers who had professional experiences but not classroom instruction experiences. The other two participants, Carolyn and Nicole, had no professional or formal classroom experience and had continued onto their Master's Degree program immediately after completion of their undergraduate program.

Participants' Change in Attitudes and Beliefs About Technology in General

The first research question examined changes in participants' attitudes and beliefs about technology related to schools in general. This question was an examination in two separate parts: personal attitudes and beliefs and how those personal attitudes and beliefs affected perception of the role of technology in schools.

Survey data. Participants' survey data were examined for changes between pre-course and post-course surveys. The M-TPCK Survey examined seven survey items related to participants' general attitudes and beliefs about their personal use of technology, and five items examined participants' personal attitudes and beliefs about the role that technology plays in the classroom. The changes were examined across participants, which are summarized in Table 12 and Table 13 respectively. While there were five participants in the study, Carolyn did not complete a post-course survey, preventing any analysis of her changing survey responses.

Table 12

Participants' Change in M-TPCK Score for Personal Technology Use Statements

M-TPCK Statement	Heather	Mort	Adrienne	Nicole
I know how to solve my own technical problems.	0	0	0	0
I can learn technology easily.	0	0	0	0
I keep up with important new technologies.	0	-1	0	0
I frequently play around with the technology.	-1	-1	0	0
I know about a lot of different technologies.	-1	0	1	0
I have the technical skills I need to use technology.	0	-1	-1	0
I have had sufficient opportunities to work with different technologies.	-1	0	0	0

Seven survey items dealt directly with participants' attitudes and beliefs concerning their ability to use technology in their personal lives. Participants' responses to four of the survey items reflected little or no change after course completion. On the other three items, half of the participants reported a change. Mort reported a 1 point drop from agree to neutral in his ability to keep up with new technologies, while the other participants reported no change. Heather reported a 1 point drop from disagree to strongly disagree in her belief that she has had sufficient opportunities to work with different technologies. Heather and Mort reported a 1 point drop, from neutral to disagree, in their belief that they play around with technology. Mort and Adrienne reported a 1 point drop, from neutral to disagree and agree to neutral respectively, in their belief that they have the technical skills needed to use technology. Adrienne's survey was the only one that reported a 1 point increase from disagree to neutral, indicating that she felt she knew more about a variety of technologies after completing the course.

While these changes indicated a slight change in attitudes and beliefs, the course did not appear to have a major impact on participants' general attitudes and beliefs concerning personal use of technology as 20 responses across the seven statements indicated no change. The lack of change in these first seven items suggests that participants' attitudes and beliefs about technology in general remained, for the most part, unchanged after course completion.   However, the survey revealed that participants were exposed to a number of resources and technologies that they were unfamiliar with and how little exposure they had to those tools prior to the course.

Table 13

Participants' Change in M-TPCK Score for Instructional Technology Use Statements

M-TPCK Statement	Heather	Mort	Adrienne	Nicole
I can choose technologies that enhance the teaching approaches for a lesson.	-1	-1	0	-1
I can choose technologies that enhance students' learning for a lesson.	-1	-1	0	-1
My teacher education program has caused me to think more deeply about how technology could influence the teaching approaches I use in my classroom.	-1	-1	0	0
I can adapt the use of the technologies that I am learning about to different teaching activities	-1	-2	0	-1
I can choose technologies that enhance the content for a lesson.	-1	-2	0	-1

The final five items focused on participants' general attitudes and beliefs about

the role that technology plays in schools. While the first seven items revealed little

change between the pre-course and post-course surveys, the final five items reflected

changes for three of the four participants. These changes revealed a decrease in

participants' attitudes and beliefs about the role of technology in classrooms and

participants' stated that they disagreed with many of the statements on the post-course

survey. Participants were less sure of their preparedness to use technology in classrooms.

This change did not necessarily reflect negatively on the course. Instead, it may well be

that participants' lack of exposure to technology in schools prior to completing the course

meant they perceived successful use as less complex before the course began. Upon

completion of the course, it may well be that participants' were less confident in their use

of technology in schools because they were more self-aware of their lack of understanding.

Adrienne was the only participant who did not report changes in her attitudes and beliefs about the role of technology in classrooms. This lack of change may be a reflection of her realistic personal confidence in her ability to perform this task prior to the start of EDIT 504. It is possible that completing the course merely reinforced what she already believed to be true about the use of technology in schools.

Interview data. While the survey data provided general information about how participants' attitudes and beliefs changed after completing the course, the interview data helped to explain the survey results. Participants' spoke at length during interviews about their attitudes and beliefs about technology in general and its use in schools. Analysis of their interviews revealed three shared themes: personal foundations, learning, and teaching. These themes and three additional themes unique to particular participants are summarized in Table 14.

Table 14

Participants' Attitudes and Beliefs About Technology in General Themes

Themes	Heather	Mort	Carolyn	Adrienne	Nicole
Personal Foundations	X	X	X	X	X
Teaching	X	X	X	X	
Learning	X	X	X	X	X
Comfort					X
Interaction				X	
Authentic Application	X				

  Personal foundations. Evidence of the personal foundations theme was found in all five participants' pre-course interviews. This theme reflected participants' personal experiences, attitudes, and beliefs about technology for personal use and as part of the learning environment prior to their start in EDIT 504. Each participant's personal foundation and use of technology prior to EDIT 504 not only created a starting point for each learner but also foreshadowed how willing they were to use and incorporate various learning technologies in their practice at the course's completion. For instance, Mort reported in the pre-course interview that his experience in the Marine Corps made him receptive to technology and also gave him unique technical skills. He stated that he believed he was already prepared to incorporate technology in schools successfully. His post-course survey and interview revealed that, after completing the course, he had re-evaluated this overconfidence. Adrienne, on the other hand, indicated during the pre-course interview that she was open and critical to technology and problem solving prior

to entering EDIT 504 and, in the post-course interview, came to understand that her ability to assess and solve problems was a foundation that supported her understanding of technology use.

Teaching. Evidence related to teaching was found in the interviews of four of the five participants. This theme reflected their general attitudes and beliefs about the use of technology as it supports teachers and their ability to reach a generation of students exposed to technology from a young age. Adrienne and Heather examined the role that technology plays in supporting quality teaching in the classroom. Adrienne reported in her post-course interview that integrating technology in schools helps to engage students and connect them with content. Heather explained that assessing the affordances of tools rather than simply using a tool due to a teacher's comfort level with the tool was important. Mort's attitude focused more on the challenge that teachers face in finding ways to develop comfort before integrating tools. Mort's attitudes changed about a belief that technology is easy to learn but requires time and commitment for teachers to learn. In her post-course interview, Carolyn expressed an evolving understanding of the role that technology plays in the teaching environment, shifting from a focus on traditional methods to the possibility of using tools to engage learners in multiple mediums.

Learning. Evidence related to learning was found in the interviews of all participants. This theme reflected how participants explored their attitudes and beliefs in relation to the role that technology plays in supporting their students' learning and the learning environment. By the end of the course, all participants developed similar attitudes and beliefs about technology and its use in the learning environment. In his

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course reflection, Mort expressed a solid foundation and focus for the use of technology in the learning environment. Heather also expressed a belief that technology plays an important role to engage students in the learning process. In her post-course interview, Nicole expressed the importance of recognizing how and why the integrated tools support student learning in comparison to her own experiences.

Unique changes. Three unique themes emerged in the analysis of the case studies of Nicole, Adrienne, and Heather. These themes were comfort with technology, interaction mediated by technology, and authentic application of technology respectively. Although not found in other case studies, these are instructive because they provide additional information about possible attitudes and beliefs held by preservice teacher learners. In her post-course interview, Nicole noted that she struggled to understand the design experiences from the lens of graduate learner. Nicole's lack of comfort with the tools impacted her ability to analyze the design experiences for their lesson about classroom instruction and the role technology plays in schools. During her pre-course interview, Adrienne's attitude about technology in schools indicated a struggle over how technology is used to influence interactions, expressing concern with over sharing in many technology-infused interactions. As the course ended, Adrienne indicated that these beliefs had begun to shift, encouraged by the use of technology in schools to support interactions that will engage students in the learning environment. Heather indicated a belief in the importance of technology in schools to help create authentic scenarios in which to engage students. During the pre-course interview, she spoke at length about the huge impact that technology has had on our world and the way in which

it has helped to connect and engage a global community. In her post-course interview, Heather explained how her initial attitudes and beliefs about technology informed her view of technology's role in the learning environment and reiterated her belief that technology must be used in a manner that is real and authentic, not just incorporated as a tool for the sake of having a tool.

Summary. As participants progressed through EDIT 504, they experienced a number of changes in their attitudes and beliefs about the use of technology in schools. While many participants indicated a negative change on some survey items, the analysis of their interviews indicated that these changes were a result of an evolved understanding of the concepts referred to on the survey, resulting in a more critical self-analysis of their skills and abilities. Each participant had unique personal foundations that influenced the way they processed information in the course. Each participant expressed changes in their attitudes and beliefs about the use of technology to impact teaching and learning in schools. In addition to the collective changes, three of the participants expressed unique changes that were unexpected in the initial design of the course. These individual changes evolved as a result of the starting point for each participant prior to the beginning of EDIT 504 and changed as a result of their progress through the course.

Participants' Changes in Attitudes and Beliefs About Technology in Social Studies

The second research question examined participants' changes in their attitudes and beliefs about technology as it relates to their ability to support social studies instruction. This measure explored how participants interpreted technology as a tool to

support historical thinking skills to solve complex, authentic problems in social studies instruction.

Survey data. Participants' survey data were examined for changes between the pre-course and post-course surveys. The M-TPCK Survey asked nine items relating to the participants' attitudes and beliefs about technology in social studies. These nine items examined the participants' personal attitudes and beliefs about their ability to integrate historical thinking skills into the classroom, use technology to support these complex thinking skills, and appropriately prepare lessons that will engage students in doing history. The changes were examined across each participant and summarized in Table 15. While there were five total participants in the study, Carolyn did not complete a post-course survey, preventing any analysis of her changing survey responses.

Table 15

Participants' Change in M-TPCK Score for Social Studies TPCK Statements

M-TPCK Statement	Heather	Mort	Adrienne	Nicole
I have sufficient knowledge about social studies.	1	-1	0	-1
I can use a historical way of thinking.	0	-1	0	-1
I have various ways and strategies of developing my understanding of social studies.	0	-2	1	-1
I can select effective teaching approaches to guide student thinking and learning in social studies.	0	-2	0	-1
I know about technologies that I can use for understanding and doing social studies.	-1	-2	1	-1
I am thinking critically about how to use technology in my classroom.	-1	0	0	-1
I can teach lessons that appropriately combine social studies, technologies, and teaching approaches.	0	-2	0	-1
I can select technologies to use in my classroom that enhance what I teach, how I teach, and what students learn.	-1	-2	1	-1
I can use strategies that combine content, technologies, and teaching approaches that I learned about in my coursework in my classroom.	0	-2	1	-1

The nine items covered elements of social studies content knowledge, pedagogy or teaching approaches, and how participants' perceive their ability to use technology to support one or both of those elements. The first four items dealt specifically with social studies content knowledge and pedagogical knowledge. Despite the course focusing on technology integration and lesson design and not social studies pedagogy, Mort and Nicole reported changes in each of these four statements with Mort reporting a two point change in two of the statements from neutral to strongly disagree and Nicole dropping

from agree to neutral in all of her statements. Three participants reported change in two of the four items, and both Heather and Adrienne reported a one point increase, from neutral to agree, in one item. Despite the course's focus on the role that technology played in supporting complex thinking skills to solve authentic problems in social studies, participants still found the course impactful on teaching methodologies that they learned about in other coursework. They indicated that upon completion of the course, their understanding of social studies pedagogy and content knowledge had changed.

The five remaining statements in the survey focused on participants' attitudes and beliefs about their ability to use technology to support social studies instruction. Of the five statements, at least three participants reported changes in three of the statements, and all four participants reported change in two of the statements. These two statements reflected the ultimate goal of the course - to develop an understanding about the role that technology plays in supporting complex social studies thinking skills used by students to engage in the authentic work of professionals while learning social studies content.

Nicole was the only participant to report change in every statement - a one point drop in each response from agree to neutral. Her consistent drop is unique because she initially reported the highest perception of abilities during the pre-course survey. Her confidence in social studies teaching methodologies and technology integration appeared to be inflated prior to the course with a more honest self-assessment at the conclusion of the course, which was supported in her interviews and reflections.

Mort was the only participant to report a two point drop in any statement. Of the nine items, Mort reported a two point drop in six of the statements including four of the

statements related to technology integration with content knowledge and pedagogy from agree to disagree or neutral to strongly disagree, a key focus of EDIT 504. Mort's critical analysis of his own perception of his abilities reflected the lack of exposure that Mort had to technology, both in his own K-12 experience as well as during his pre-service program.

Heather and Adrienne reported change in four statements, and three of the four changes occurred in statements reflecting their perceived ability to integrate technology. Heather reported a one point drop in three of the technology-related statements, focusing on statements that reflected her limited knowledge of various tools and how to use technologies in social studies. Adrienne reported a one point increase in three of the statements focused on technology integration, from disagree to neutral. Her positive change indicated a lack of confidence in her abilities prior to the course as well as a critical examination of what she learned through the course and how it impacted her understanding of the role that technology played in supporting social studies instruction.

Interview data. While the survey data provided a general overview of how participants' attitudes and beliefs about their ability to integrate technology to support complex thinking skills and social studies lesson design changed after completing the course, the interview data helped to explain the survey results. Participants expressed their attitudes and beliefs about technology in social studies during their interviews. Analysis of their interviews revealed three shared themes: technology's impact on teacher preparation and planning, student engagement, and student outcomes. These themes and

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three additional themes unique to particular participants that emerged during the case

study analyses are summarized in Table 16.

Table 16

Participants' Attitudes and Beliefs About Technology in Social Studies Themes

Themes	Heather	Mort	Carolyn	Adrienne	Nicole
Technology and Preparation/Planning	X	X	X	X	
Technology and Student Engagement	X	X	X	X	X
Technology and Student Outcomes	X	X	X	X	
Technology and Direct Instruction			X		
Technology and Teacher Engagement		X			
Technology and Future Instruction					X

Technology and preparation/planning. Evidence of the technology and

preparation and planning theme was found in four of the five participants' post-course

interviews. This theme explored how participants' indicated what role technology played

in helping prepare and craft lesson designs. This theme reflected the way in which

participants thought about the process they used to select technology tools during the

planning phase of their lesson designs and the need to use technology in order to

effectively prepare to meet the needs of students. Heather stated a belief that technology

is an integrated piece of lesson design that is planned and prepared to support complex

instruction. Similarly, Mort expressed a belief that technology should be incorporated

into lessons through a complex planning process rather than as an afterthought. Carolyn struggled with central concepts of the course and expressed that many ideas of the course conflicted with traditional methods that she had been taught. Most of the participants conceived of technology during the preparation and planning process as a tool that needed to be thoughtfully incorporated into lesson designs. However, Carolyn expressed ideas that indicated she believed that technology limits her ability to quickly teach content to students rather than supporting the learning of complex content.

Technology and student engagement. Evidence of the technology and student engagement theme was found in all five participants' post-course interview. This theme reflected the way participants' perceived students engaging with technology during a lesson. This is the participants' expression of how they believe technology will serve to help students solve a problem and how they will use technology to interact with and think about the social studies content. Heather expressed how technology helped to mediate collaborative group activities between students and afforded engaging learning opportunities. Mort reported how engaged students could become using technology to support classroom activities. Similarly, Nicole indicated her belief that technology helped to keep students interested during lesson activities. Adrienne summarized her attitudes and beliefs about technology stating that it is as a tool to engage students in a way that echoed most participants. Carolyn, unlike the other participants, wrestled with her beliefs in the power of direct instruction and presentation as an engaging method for students, and this was reflected in her attitude about students.

Technology and student outcomes. Evidence of the technology and student outcomes theme was found in four of the five participants' post-course interviews. This theme reflected participants' evolving attitudes and beliefs about the role that technology played in influencing the way students express their understanding of course content and the products that they create to demonstrate their comprehension of complex material. Heather wrestled with the challenge of integrating various tools even though she recognized the importance and usefulness of technology in supporting students' creativity. Mort and Adrienne were more excited about the role that technology played in affecting student outcomes after completing the course. In his post-course reflection, Mort explained the value that technology played in helping students express their understanding and ideas, using his own experiences and perceived limitations to incorporate technology into his thinking framework as he contemplated his future classroom. Adrienne explained that her beliefs were challenged, and she recognized a role that technology could play in engaging students while allowing her to understand their comprehension of material through created outcomes. Carolyn, on the other hand, appeared to be initially open and excited about the role that technology could play in helping her students express their understanding at the start of the course but became more reliant on traditional methods and activities as she progressed through the course.

Unique changes. Three unique themes emerged in the analysis of the case studies of Carolyn, Mort, and Nicole. These themes were technology and teacher engagement, technology and future instruction, and technology and direct instruction respectively. Although not found in other case studies, these are instructive because they

provide additional information about possible attitudes and beliefs about technology in social studies held by preservice teacher learners. In his pre-course and post-course interviews, Mort discussed how technology could help prepare him for his role as a teacher and support his interactions with students. He revealed that technology plays a role in engaging teachers as a way of mediating interactions and supporting student learning.

Both Carolyn and Nicole were recent graduates of their undergraduate program and had graduated high school within five years of participating in EDIT 504. Their limited perspective on classroom practice and practical application of conceptual ideas constricted their ability to understand and incorporate course concepts into their attitudes and beliefs on technology in social studies instruction. In her post-course interview, Carolyn reinforced her belief that direct instruction was the only way of engaging students and teaching course material. Carolyn indicated this struggle came from the conflicting views from other classes in her pre-service education program. Carolyn incorporated the technology concepts from the course into her thinking framework that reinforced her belief in direct instruction as the only effective way to teach. In her post-course interview, Nicole explained that the course gave her the opportunity to experience social studies content that incorporated technology to solve complex problems. She began the course with no specific ideas on how to integrate tools into her future classroom and concluded the course with a number of ideas, lessons, and concepts on how to use tools during her future instruction.

Summary. Throughout EDIT 504, participants' previously established attitudes and beliefs about the role that technology plays in the social studies classroom were challenged. While many participants believed strongly in their own understanding of tools and social studies instruction, they found that their initial understandings were limited in scope as reflected by the changes in their survey results. In speaking with participants, it became apparent that their attitudes and beliefs about technology in the social studies classroom were changed as they were able to think about the role that technology plays in influencing their preparation and planning and their future students' engagement and outcomes. Additionally, the course provided an opportunity for a number of participants to wrestle with their own beliefs about technology as it affects specific elements of the teaching process.

Participants' Change in Ability to Design Technology Integrated Lessons

The third research question explored the participants' ability to design technology integrated lessons by examining the results of their five lesson plans submitted during EDIT 504. This question explored how participants incorporated elements of the course and integrated those elements into their lesson design process.

Lesson design results. Participants' five lesson design averages were derived from the results of three specific elements in their lesson plans that indicated how each participant was incorporating concepts from the course and integrating those concepts into their lessons. These three elements were the identification and explanation of the habit of mind used in the lesson, the rationale of the technology used and how it supports the complex thinking skill identified, and the use of an authentic problem to frame the

course content in the lens of a practitioner. The overall change from the first lesson plan

to the fifth was calculated to examine how the participants' lesson designs changed across

the course. The results are summarized in Table 17 and visualized in Figure 8.

Table 17

Participants' Average Lesson Plan Score and Overall Change Across Lessons

Participant	Avg Lesson Plan 1	Avg Lesson Plan 2	Avg Lesson Plan 3	Avg Lesson Plan 4	Avg Lesson Plan 5	Overall Change
Heather	8.00	6.70	8.00	8.00	8.00	0.00
Mort	6.00	5.30	5.30	6.00	7.30	1.30
Carolyn	4.67	4.00	5.33	5.33	5.33	0.67
Adrienne	5.33	8.00	7.33	8.00	8.00	2.67
Nicole	5.33	6.00	5.33	6.67	6.00	0.67
Average	5.87	6.00	6.26	6.80	6.93	1.06

Note. This table lists the average score of participants' lesson plan design elements and the overall change in average score from the first to the last lesson plan. Average Scores ranged on a scale from 4.00 to 8.00.
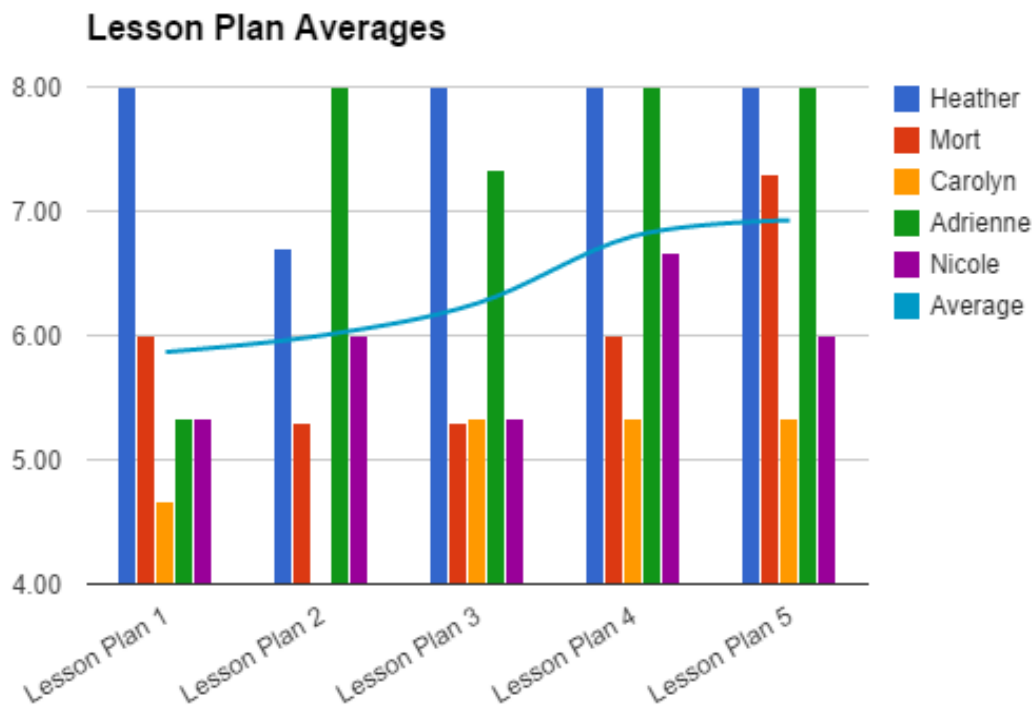
Figure 8. Participants' Lesson Plan Averages and Overall Average

Upon the completion of each lesson, participants were given detailed feedback explaining the score they received on their lesson plans. Heather was extremely successful at identifying and explaining essential elements of her lesson plan from the start of EDIT 504 and continued to excel throughout the course. However, the other four participants were less successful in their initial lesson plans. Individually, each participant experienced a series of progressions and regressions in each lesson plan. Three of the participants, Carolyn, Adrienne, and Nicole, struggled in their first lesson plan, scoring below a six. By the end of EDIT 504, Adrienne and Nicole had both

written lesson designs that scored above a six, indicating their rising understanding of course material. However, even as the participants succeeded in their lesson designs, each participant had a subsequent lesson where their overall score dropped despite their evolving integration of course concepts into their lesson designs.

Participants processed the information provided to them and, in subsequent lesson plans, continued to improve their lesson designs with each iteration. The average score of all participants in the first lesson plan was below a six at 5.87 but, by the end of the course, was nearly a seven at 6.93. Participants' average increased each lesson design, with no regression between lesson plan iterations. Despite individual regressions between each lesson plan, the participants continuously improved collectively as they incorporated feedback and course content into their lesson designs.

Four of the five participants experienced individual growth between the first and final lesson plan. Mort, Carolyn, and Nicole all experienced a minor amount of change, between 0.67 and 1.30, which reflected the struggles that they continued to have by the end of the course. Adrienne experienced the largest individual gain, 2.30, which reflected how easily she was able to learn course content and incorporate those concepts into her lesson designs. Heather experienced no growth because there was nowhere for her to go. Her first lesson plan explained and explored the thinking skills, technology affordances, and authentic experience of her lesson design. While she experienced a slight regression on the second lesson plan, she quickly recovered and continued to earn perfect scores after that. It is more telling that she experienced no change rather than

negative change, indicating her quick adoption of the complex concepts introduced in the course.

Interview Data. The positive results of the participants' lesson designs indicated that all participants developed an understanding of the course material, specifically how technology affordances can support complex thinking to solve authentic problems. Participants' lesson designs and post-course reflections revealed additional information about their lesson design abilities. Analysis of the lesson designs and post-course interviews revealed three shared themes: social studies goals, authentic thinking skills, and technology use. These themes and three additional themes unique to particular participants are summarized in Table 18.

Table 18

Participants' Ability to Design Technology Integrated Lessons Themes

Themes	Heather	Mort	Carolyn	Adrienne	Nicole
Social Studies Goals	X	X	X	X	X
Authentic Thinking Skills	X	X	X	X	X
Technology Use	X	X		X	X
Confidence		X			
Perceived Abilities			X		
Experience					X

Note. The X in this table indicates that the theme was expressed by the participant

Social studies goals. Evidence of the social studies goals theme emerged in all five participants' post-course interviews. This theme reflected the goals often defined by the state Standards of Learning (SOL) which help to define what students are expected to know by the end of the lesson. Participants explored the concept that social studies goals meant more than just the defined facts that students needed to know for the SOLs and, instead, focused on student knowledge and comprehension. Carolyn indicated that there was more to social studies instruction than just the standardized learning objectives. Adrienne struggled with the juggling act between ensuring students memorize content for the standardized test while still engaging them in authentic content and activities. She believed that when students are engaged, they connect with the content, and when they connect, they learn the material, covering the essential objectives mandated by the SOLs. Similarly, Heather recalled her view of social studies goals as more encompassing than what will be on the SOLs. Mort viewed the SOL content as an easy way to determine the content of the lesson while focusing his attention on engaging students in an authentic learning environment.   Nicole struggled the most with incorporating SOL objectives as a design element rather than the focal point of the entire lesson. She lacked knowledge of the content which forced her to rely on provided knowledge and facts from the standards. This limited her ability to design lessons that engaged students.

Authentic thinking skills. Evidence of the authentic thinking skills theme was exhibited by all participants in their lesson design reflections and during their post-course interviews. This theme reflected how participants perceived students' ability to effectively learn course content when they engaged in the authentic work of professionals

who use complex thinking skills to solve challenges with which they are presented. Each participant wrestled with integrating authentic thinking skills in their lesson designs. Heather and Carolyn both explained how they were not personally engaged by the concept of authentic problems but recognized their effectiveness in the secondary learning environment. Nicole noted that her lesson design process evolved as a result of the course. Similarly, Mort explored his lesson design process and indicated that it changed to incorporate authentic thinking skills to benefit students' comprehension of course content. Finally, Adrienne explained that the repetitious design cycle in the course enabled her to improve her ability to design engaging, creative, and authentic lesson designs.

Technology use. Evidence of the technology use theme was found in four of the five participants in the study in their lesson designs and their post-course interviews. This theme reflected how participants addressed the affordances of various technology tools and ensured those affordances were carefully selected to support the authentic thinking skills of the lesson. Apparent in her first lesson design, Heather articulated the choices behind the technology chosen to support the authentic thinking skills in her lesson designs. Heather provided an overarching definition of the importance of affordance-based design. Similarly, Adrienne explained how her chosen tools supported authentic thinking skills in her lesson designs. She reflected on the need to understand how to support student thinking when integrating technology and how to guide them through potentially overwhelming tools. Mort and Natalie, on the other hand, struggled throughout the course to adequately address appropriate tool affordances. Mort failed to

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connect the affordances of integrated technology tools to the authentic thinking skills but reflected on his ability to analyze his lesson designs and determine the most effective way to create an authentic learning experience for students. Nicole explored her understanding of technology integration as it affected her process of lesson design, reflecting on the need to thoughtfully incorporate tools to support the lesson.

Unique lesson design changes. Three unique themes emerged in the analysis of the case studies of Mort, Carolyn, and Nicole. These themes were confidence, perceived abilities, and experience respectively. Although not found in other case studies, these are instructive because they provide additional information about possible lesson design abilities held by preservice teacher learners. Mort explained how his confidence in his own abilities influenced his ability to design lessons. His lack of confidence in his ability to design lessons contributed to the challenges he experienced in the course. Carolyn believed that her approach to lesson design was more important than any feedback she received. Her perceived abilities limited the growth of her ability to effectively design technology integrated lessons as she relied on direct instruction as her go-to teaching methodology. Nicole expressed that she lacked lesson design experience which prevented her from having a lens through which to view, analyze, and process course material to influence her lesson design process. She reported that the course was beneficial in that it afforded her the opportunity to develop a concrete understanding and approach to lesson design that was her own.

Summary. EDIT 504 was designed to teach preservice social studies teacher learners how to effectively integrate technology into lesson designs to support complex

thinking skills needed to solve the authentic problems faced by practitioners using course content to frame problems. As participants progressed through the course and designed their own technology integrated lessons, they developed an understanding of how their social studies goals helped to frame lessons, how the use of authentic thinking skills engaged students in the work of professionals, and how technology selection occurs by recognizing the affordances of various tools and how those affordances support complex thinking. Each participant engaged with the lesson design process, displaying growth throughout the course. Each reflected on their growth during the course as well as at the end of the course. Despite the stated goals of the course and targeted skills in the lesson design process, a number of unique changes occurred in various participants based on their background prior to their participation in EDIT 504. These unique changes appeared to be highly influential over how participants engaged with course content and evolved their ability to design technology integrated lessons.

Participants' Learning Experiences Based on Course Structure

The final research question explored how the structure of the course impacted the participants' ability to learn and engage with course content. This research question sought to understand how the various elements designed for the course - the learning activities, the design experiences, and the student interactions - helped participants develop an understanding of how to successfully integrate technology to support complex thinking skills in the social studies needed to solve the challenging problems of practitioners.

Interview Data. During the post-course interview, participants were asked a number of questions about the structure of the course and how the course design and activities impacted their learning throughout EDIT 504. Participants shared their experiences, what they felt was successful, and which elements of the course they found to be particularly disruptive to their learning process. The results of their feedback are summarized in Table 19.

Table 19

Impact of Course Structure on Participants' Ability to Learn Course Content Themes

Themes	Heather	Mort	Carolyn	Adrienne	Nicole
Course Design	X	X	X	X	X
Learning Activities	X	X	X	X	X

Note. The X in this table indicates that the theme was expressed by the participant

Course Design. Evidence of the course design theme was found in all five participants" post-course interviews. This theme reflected participants' feedback about the pacing, structure, and design pattern used in the course. Participants provided positive and negative feedback about the course design, specifically the design pattern and the online structure. Heather particularly enjoyed the repetitive design pattern used in the course. Mort echoed those sentiments and indicated that it aided his learning of course material. Nicole indicated that the repetitious design pattern relieved her stress about her unfamiliarity with lesson design and her limited teaching experience. On the

other hand, Carolyn and Adrienne did not reflect positively on the repetition. Carolyn noted that there was too much work to be done in the course despite the usefulness of the design pattern. Adrienne explained that the length of the course and number of iterations was very tiring for her.

In addition to the design pattern, participants spoke about the nature of the course being conducted online. Heather indicated that the course worked best as an online course due to the subject matter. Again, Mort echoed Heather's sentiments, as he learned the tools by using the tools. Carolyn wrestled with time and felt that the nature of the online structure supported her throughout the course. Nicole also felt that the online structure supported her time management challenges. While Nicole struggled with managing the expectations of the course, the fact that the online structure was divided into specific deadlines supported her learning.

Learning Activities. Evidence of the learning activities theme was found in all five participants' post-course interviews. This theme reflected participants' reactions to the various readings, discussion, experiences, and design challenges presented throughout the course. While feedback varied, participants were unanimously negative about the discussion boards and unanimously positive about the design challenges. Heather explained that asking the same question each module became very exhausting. Adrienne reflected that the discussions were frequently forced. Carolyn also echoed these sentiments and explained her frustration at the repetitive topics.

Regardless of participants' feedback about the discussions, participants reflected that the lesson design challenges were a positive experience. Nicole reflected that the

design challenges afforded her the chance to learn the concepts through the experience of designing. Mort had a lack of experience in writing traditional lesson plans, so he was also pleased with the lesson design challenges. Heather reflected on her limited social studies knowledge and noted that the lesson designs forced her to explore new, unfamiliar content. Carolyn expressed an appreciation for the targeted curriculum which forced her to look outside of her comfort zone. Adrienne explained that the varied curriculum was important for her as a professional as it provided her more experience to be successful as a teacher.

Summary. Participants spent 10 weeks in EDIT 504 learning about how technology could be integrated to support the use of complex thinking skills needed to solve the real-world problems faced by practitioners who interact with social studies content. During that time, they were exposed to a number of different learning activities in a course design that used a repetitious pattern. While some participants expressed frustration with the lack of variation within the design pattern, many participants appreciated the predictability of learning activities and the repetitive schedule that enabled them to focus on learning content rather than learning the expectations for each module. Additionally, the learning activities within each module challenged participants and increased their understanding of the complex course material. While the discussion board prompts were ultimately disengaging because their identical nature led to stagnant conversations, the lesson design challenges afforded students the opportunity to practice their craft and apply the newly learned concepts to their evolving professional practice.

Cross-Case Analysis Summary

Each participant entered EDIT 504 with their own perceived use of technology in schools and their personal lives and had their own considerations for effective instructional methods. Regardless of their personal background and expectations for the course, EDIT 504 challenged participants' thinking about technology, social studies instruction, and the lesson design process. One participant resisted change and became entrenched in traditional methods of instruction while the other four participants confronted their preconceived notions and forced themselves to consider alternative methods of instruction and technology integration. While the course contained a number of weaknesses, such as repetitive discussion questions that stymied conversation and readings that some participants felt were too time consuming, that presented learning challenges for participants, the overall design of the course provided an environment for participants to practice new instructional design methodologies with which they were unfamiliar. The design of the course enabled participants to experience similar growth across a number of themes that were expressed by the participants.

CHAPTER 6

New classroom teachers are expected to be able to successfully integrate

technology into the classroom in ways that support the thinking skills of students while

also being an expert in content knowledge and master of classroom pedagogy. However,

as preservice teacher learners, these new teachers are often taught using a model of

preservice teacher technology education that separates technology from the lesson design

process and that focuses on tool comprehension rather than affordance recognition and

integration. A new course designed to address the challenges of preservice teacher

technology education, EDIT 504, engaged students in learning about technology

integration based on considerations of the way tools' ability to support the complex

thinking skills interact with content and solve the challenging problems faced by

practitioners.   This study examined the impact that course completion had on

participants' attitudes and beliefs and their ability to design technology-rich lessons.

Participants completed a course organized around the historical thinking skills

that frame social studies content and learned to select technology based on how its

affordances supported the thinking skills of each lesson design. Participants were

exposed to this method of lesson design through design experiences (where they

completed lessons from the lens of a classroom student), design examples (where they

read about the lesson design process from the lens of a classroom teacher), and design

challenges (where participants created their own lesson designs that integrated technology to support historical thinking). Through the course design, preservice teacher learners' develop an ability to successfully integrate technology into their lesson designs that supports the use of complex thinking skills to solve problems faced by practitioners and are able to successfully enter the classroom prepared the meet the challenges of instruction.

To examine changes in participants' attitudes and beliefs and their ability to design lessons that might have occurred after course completion, an exploratory case study methodology was employed. Data for the case studies were collected using a pre-course and post-course survey, a pre-course and post-course interview, lesson designs and lesson reflections, and a course reflection. The survey examined participants' perceived understanding of technology, pedagogy, and content knowledge in general and as they related to social studies. The interviews asked participants about their attitudes and beliefs toward technology and their reflections on the course. The lesson design and reflections were collected throughout the course and were used to identify any changes in participants' ability to design technology-rich lessons.

Individual case studies explored each participant's experiences throughout the course and how their completion of the course impacted their attitudes and beliefs toward technology as well as their ability to design technology integrated lessons. Each exploratory case study identified themes that emerged in participants' data related to participants' journeys. A cross-case analysis was developed to examine emerging themes across participants' in relation to the study's research questions. Emergent themes were

analyzed across participants in the cross-case analysis to develop an understanding of how participants changed as a result of course completion.   As a result of the exploratory case studies and cross-case analysis, it was possible to identify a number of conclusions about how participants were influenced by course completion.

Summary of Findings

Preservice teacher learners' attitudes and beliefs about technology in general.

- As participants progressed through the course, they expressed their attitudes and beliefs about technology and its role in supporting pedagogy. Through the surveys and artifacts, it was found that participants developed a belief that technology could support teachers' pedagogy in the classroom.

Preservice teacher learners' attitudes and beliefs about technology in social studies.

- Throughout the course, participants were exposed to technology incorporated in social studies lesson designs from multiple perspectives. Through their experiences in the course, participants developed an understanding that technology should be thoughtfully designed and integrated into a lesson to support complex thinking skills rather than implemented for the sake of technology.

- Each participant interacted with technology from the perspectives of a classroom student, a teacher designer, and as the lesson designer themselves. These interactions led the participants to develop a belief that technology is a useful tool that enables the creation of an engaging learning environment.

Preservice teacher learners' ability to design technology integrated lessons.

- Each participant was challenged through the five modules to design a lesson that integrated technology that supported historical thinking skills to engage with authentic problems. Participants' ability to design lessons grew steadily across these design challenges. Participants incrementally improved their ability to address the interaction of thinking skills, technology affordances, and authentic challenges in their lesson designs.

- Each module within the course focused on developing covert goals through the use of authentic problems. Despite this focus, participants struggled with the overt SOL goals of each lesson, frequently making factual memorization the main objective of their lesson designs.

- Participants were asked to create lesson designs that framed social studies content in an authentic challenge faced by a practitioner. Many of the preservice teacher learners viewed these authentic problems as silly and hokey for adults but recognized that they were powerful learning experiences for their future students.

- Participants were expected to integrate technology into each lesson design based on the thinking skills that the selected tool afforded. While some participants struggled to effectively recognize and specify the affordances of selected tools, most of the participants used technology to support the complex thinking skills of their lessons by the end of the course.

Preservice teacher learners' experiences in the course.

- Each module of the course was designed using a repetitive design pattern framed around each of the five strands of historical thinking. Participants found that the repetitious design pattern supported their learning and relieved stress associated with an overwhelming workload and provided them flexibility to support their learning.

- During each module of the course, participants were supposed to engage in two discussion board sessions. Participants explained that the discussion board prompts were repetitive and led to stagnant conversations that did not expand on the content of the readings or design experiences and design examples.

- The course was purposefully designed in an asynchronous online learning environment using a learning management system. Participants found the online nature of the course served an important purpose. It provided them an additional learning opportunity of integrated technology and modeled many of the course concepts.

- In each module, participants engaged in a design experience that exposed participants to a lesson design incorporating technology from the perspective of a classroom social studies student. Based on the experiences of the participants, preservice social studies teacher education programs should be structured in a manner that provide learners a chance to experience the concepts being taught from the perspective of their future students.

- Participants explained that the lesson design challenges they completed at the conclusion of each module were extremely beneficial. Designing lessons across multiple curricula forced them outside of their comfort zone and was beneficial to their professional growth. The iterative process enabled their growth and repetitive attempts to successfully integrate technology into lesson design.

Although not targeted by the research questions or a focus of the study, participants' experiences prior to the start of EDIT 504 influenced their attitudes and beliefs and the way they interacted with course material. Through the participants' artifacts and interviews, the following findings emerged during the study.

- Each participant entered the course with attitudes and beliefs about technology and the role of technology in social studies instruction. For these participants preparing to enter the classroom, their personal views of technology affected their perception and use of technology in lesson designs and the likelihood that participants accepted or resisted new ideas about teaching and learning.

- Each participant had professional experiences before starting the course. Three of the participants had extensive professional experience and were able to integrate these experiences into their understanding of technology and lesson design. Two of the participants did not have professional experience and struggled to adjust their understanding and integration of technology in the lesson design process.

- Participants entered the course with their own established attitudes and beliefs about the role that technology plays in the social studies learning environment.

Participants found their preconceived attitudes and beliefs challenged as a result of their experiences in the course.

- During each lesson design, participants' reflected on their lesson design process. Participants who had no professional experience explained that they struggled to design technology integrated lessons. Participants who were career switchers and had professional experience steadily progressed in their ability to design technology integrated lessons.

The findings help to explain how participants' attitudes and beliefs about technology in schools and the social studies learning environment and their ability to design technology integrated lessons were impacted by the design of EDIT 504.

Discussion

EDIT 504 was designed to provide preservice social studies teacher learners with a learning environment that introduced learners to integrated technology in lesson design. The course was situated in preservice teacher learners' disciplinary teaching area, social studies, and provided learners with content that was familiar and practical to their future professional practice. Due to the varied subjects that social studies encompasses, the course was divided into five modules framed by one of five historical thinking skills that could be applied to lesson design regardless of the specific social studies content, which provided preservice teacher learners clear, definable applications to the broad spectrum of the social studies curriculum through critical thinking, judgment, and engagement with historical material and content (Salinas et al., 2011; Viator, 2012; Waring & Robinson, 2010; Wineburg, 2001). Within each module, a repetitive design pattern was used to

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introduce participants to the historical thinking skill of the module, a design experience that exposed the participant to a secondary students' experience in a technology-infused classroom, three design examples that explained the teacher-designers' thought process used while identifying the affordances of various tools embedded in lesson designs, and a design challenge that asked participants to design their own lesson that incorporated technology to support the module's historical thinking skill in a pre-determined social studies content area. This learning environment was delivered through an online, asynchronous learning management system designed to provide participants with extended opportunities to engage with technology and its application in course concepts.

Participants' attitudes and beliefs toward technology in general. Participants entered the course with established attitudes and beliefs toward technology. These personal views about technology and its role in their lives influenced the way participants processed course material and incorporated concepts into their perception of technology. At the start of the course, four of the participants expressed open attitudes toward the role that technology played in their personal lives while one of the participants was worried about the speed at which technology was progressing. Their attitudes and beliefs about technology and its role in their lives mediated the way in which they processed, accepted, and incorporated course content into their thinking frameworks. These findings support the work of Funkhouser and Mouza (2013) who suggested that " teachers come to their training programs with deeply-held beliefs about teaching [and the] role of educational technology" (p. 272). Although EDIT 540 was not designed with the goal of changing participants' personal attitudes and beliefs about technology, the study did provide

evidence that completion of the course did change some participants' attitudes and beliefs and confirmed previous literature that found that established personal feelings toward technology influenced the way participants interpreted the course and integrated the content into their thinking framework.

Doppen (2004) explained that knowing how to operate tools and knowing how incorporate tools into an educational setting are different concepts. DeGennaro (2010) found that preservice teacher learners view technology as "a skills-based discipline that is discretely conceptualized outside of the context of learning" (p. 339). Through the course design experiences and design examples, participants developed attitudes and beliefs about technology that broke away from this mindset, enabling them to recognize that technology affordances supported the teaching and learning process and must be thoughtfully recognized and incorporated into lesson designs. Results of this study suggest that it is possible to structure preservice teacher learners' learning that enables them to understand technology as more than a skills-based discipline.

Throughout the activities in the course, participants explored how the teaching and learning process could be supported by integrating technology. During their design experiences and design examples, participants were able to explore how technology could positively influence the teaching and learning process if thoughtfully designed. Participants endorsed this thoughtful design approach. All of the participants indicated that while using and understanding specific tools can often be complex, addressing and integrating tools based on their affordances was important to support future students' learning of course content and engagement in complex thinking skills. They noted that

technology tools can be time consuming to learn but that they provide teachers with the ability to engage with an audience of students who expect to be engaged by technology on a frequent basis. Participants developed an understanding that the affordances of the tool in relation to the thinking skills is more important than learning specific tools, and all of the participants expressed a positive attitude about the role that technology plays in supporting classroom pedagogy. Funkhouser and Mouza (2013) indicated that preservice teacher learners' perception of instructional technology may stem from their own experiences in the classroom. Three of the five participants in the study had prior professional experience before entering the graduate program. As K-12 students, these three participants had very little exposure to teachers who used technology in the classroom, and yet their perception of technology and ability to integrate it would suggest that they have been exposed to integrated technology in a number of learning, professional, and personal environments. These three participants' only exposure to technology-integrated lessons prior to the course was classroom observations, so their receptive attitude towards technology integration may indicate that their lack of experience was beneficial for their acceptance of course concepts.

Two of the participants had no professional experience prior to EDIT 504, moving from their K-12 education to their collegiate education. As they progressed through the course, they struggled to understand course concepts and struggled in each of their lesson designs to successfully integrate and explain the use of technology. Their lack of perspective and practical application of conceptual knowledge supported the findings of Guo, Dobson, and Petrina (2008) who noted that "these young people [do not]

have any sophisticated critical understanding of how those media work to convey information, to influence opinion, and so on" (p. 237).   As Funkhouser and Mouza (2013) explained, "change not only takes time, but meaningful changes in teacher beliefs are unlikely to occur in the absence of practical experiences that help preservice teacher learners witness the value of technology for their students" (Funkhouser & Mouza, 2013, p. 282).   This study extended this work, finding that some preservice teacher learners have not had enough practical exposure to understand concepts that conflict with their established attitudes and beliefs toward instructional technology. The design experiences, design examples, and lesson designs served to challenge their established attitudes and beliefs about the role of technology in schools but were not strong enough to completely restructure their attitudes and beliefs.

One potential explanation for the challenges experienced by Carolyn and Nicole was closely associated to the current academic debate between digital natives, those who are "'native speakers' of the digital language of computers, video games and the Internet" (Prensky, 2001, p. 1) and digital immigrants, "[t]hose of us who were not born into the digital world but have, at some later point in our lives, become fascinated by and adopted many or most aspects of the new technology" (pp. 1-2). Where Prensky (2001) argued that digital immigrant teachers must adjust their teaching to speak the language of digital native students, recent findings challenge the argument that digital immigrants are crippling the success of digital natives in schools. In a mixed methods study using a quantitative study and classroom observation of 24 middle-school teachers and over 1,000 middle-school students, Wang, Hsu, Campbell, Coster, and Longhurst (2014)

found that "young teachers do not speak the 'language of today's students' in the classroom even when they are considered digital natives" (p. 654). The authors found that being a digital native does not mean teachers will automatically use technology in instruction, "therefore, we cannot take for granted that the gap in technology integration will be narrowed simply because more and more digital natives will be joining the teaching profession into the future" (Wang et al., 2001, p. 654). While Carolyn and Nicole were digital natives, their experiences integrating technology revealed that the digital native moniker does not mean successful technology integration into lesson design will occur.

Participants' attitudes and beliefs toward technology in social studies.
Throughout the course, participants were exposed to social studies lessons that incorporated various technology tools based on the way those tools supported complex historical thinking skills. Four of the five participants explained that the course showed them that technology tools should not be incorporated for the sake of the tool or the comfort of the teacher but that the affordances of each tool must be recognized and used to support the complex historical thinking skills needed for students to engage deeply with social studies content. One of these participants, however, stated that although she understood the importance of recognizing tool affordances the idea of thoughtful technology integration introduced in the course conflicted with her need to quickly and efficiently teach course content.

Lei (2009) who found that preservice teacher learners "'lack the knowledge, skills, and experiences to integrate technology into classrooms to help them teach and to

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help their students learn" (p. 92). However, this study confirms that preservice teacher learners can be taught to successfully integrate technology to support quality social studies instruction and that the design experiences, design examples, and lesson design challenges provided participants the opportunity to learn how to successfully integrate technology. The changes experienced by participants resulted from their exposure to integrated technology, which moved the participants "from the roles of passive users of technology, as they themselves learn technology integration, into active designers of technology" (Chien et al., 2012, p. 579).

Bower's (2008) study found that educators must be able to "appreciate the requirements within the learning context and subsequently select and utilize technologies in a way that meets those needs" (p. 14-15). The design experiences in this course supported participants' ability to appreciate the requirements within a learning context as they provided participants the opportunity to engage in a social studies lesson from the perspective of a classroom student. During these lessons, participants engaged with technology tools to solve an authentic problem. Four of the participants concluded the course with a belief that technology provides a creative and engaging learning environment for students as a result of these design experiences. They explained that by using technology effectively in the social studies classroom, it engaged students in the course content, provided a medium for collaborative group activities, and maintained student interest throughout the lesson design. The participants reflected positively on their attitudes and beliefs about technology and its role in engaging students with social studies content. Their evolving attitudes and beliefs support the findings of Gronseth et

al. (2010) who argued that exposure to and practice with technology helps to develop positive attitudes and beliefs about technology in the classroom. Their repeated and constant exposure to technology situated in their content area helped to provide the participants that practice.

As they progressed through the course, preservice teacher learners found their preconceived attitudes and beliefs about the role that technology plays in the social studies classroom challenged. These challenges to their established thinking framework forced them to confront their attitudes and beliefs and wrestle with their perception of social studies instruction. Although one participants' negative attitudes and beliefs about technology in the classroom were reinforced as a result of the challenges she experienced during the design experiences, four of the five participants accepted this challenge and indicated that their thinking was restructured by the course as a result of their interaction with situated lesson designs in the design experiences and design examples.

Results of this study support the finding of Hew and Brush (2007) who argued that attitudes and beliefs about the use of technology "play a more significant role in contributing to classroom technology integration efforts than other factors such as having access to technological infrastructure, or support from peers" (p. 242). As participants completed their lesson designs, their designs were influenced by their changing attitudes and beliefs about technology in the social studies. While one participant relied on basic technology affordances that supported direct instruction, the other four participants experimented with new lesson designs that integrated more complex affordances that supported complex historical thinking skills. They were willing to confront their

attitudes and beliefs about technology and social studies, confirming the work of Russell et al. (2003) who theorized that the opportune time to change and strengthen preservice teacher learners' attitudes and beliefs was during their preservice teacher education programs.

Participants' ability to design technology integrated lessons. Participants were asked to design five lessons during their participation in the course. In each of these lesson designs, participants' ability to address the thinking skills, affordances of integrated technologies, and use of authentic challenges to frame the content were assessed. In each of the lesson designs completed by all five participants, their abilities and expertise in these areas steadily improved. Participants experienced growth as evolving designers, confirming the research that preservice teacher learners need an opportunity to examine curriculum, practice technology integration, and receive feedback on the process of design without the risk of failing students' expectations (Brush & Saye, 2009; Chien et al., 2012; Funkhouser & Mouza, 2013; Gibson et al., 2011). Kay stated, "it is important that every effort be made to model and construct authentic teaching activities" (p. 394). The participants used these lesson design experiences to engage in an iterative process of lesson design creation where their ability to design lessons improved as they were provided with consistent, in-depth feedback.

In the design experiences and design examples, participants were exposed to lessons designed around a social studies content strand, but contained covert goals that focused on student understanding of the content's application in solving complex problems faced by practitioners through the use of historical thinking skills. Participants

were taught in the course to focus on developing these covert goals through the use of authentic problems where their lesson designs focused on students' developing an understanding of content and technology application using complex historical thinking skills. The course focused on thinking dispositions that engaged preservice teacher learners in "*doing* history, so that they better understand how claims about the past are made and justified" (Barton, 2011, p. 125).

Despite this focus, all of the participants wrestled with developing quality covert goals without sacrificing the need for students to understand and memorize the overt standardized objectives of each lesson. In each of their lesson design reflections, participants were challenged by their desire to ensure that SOL objectives were met while still creating engaging lessons that expanded on student learning and understanding. Misco and Shiveley (2010) warned that social studies educators focus "primarily on content mastery with less attention to dispositional development" (p. 121). Participants reflected in each lesson and at the conclusion of the course on the challenges of ensuring students understand standardized content objectives for testing purposes, reinforcing ideas that were stressed to participants in their methodology courses. Even though research (Bolinger & Warren, 2007; Fallace & Neem, 2005; Russell & Pellegrino, 2008; Westhoff & Polman, 2008) indicated that developing a strong pedagogical understanding of historical thinking would enable preservice social studies teacher learners to meet the needs of their students through authentic activities that engage them in thinking like a historian, preservice teacher learners continued to wrestle with the importance of content memorization over application.

Every learning activity in the course was framed by an authentic problem that helped to situate the content behind the lens of a practitioner. Each module was introduced using an authentic problem faced by a teacher, design experiences used authentic problems to frame social studies content, and participants were asked to design their own lessons with an authentic problem that engaged students in the work of doing history. Two of the participants in the course reflected that the authentic problems they designed were silly and hokey. However, despite this belief, they still expressed that authentic problems were a powerful way to frame course content, incorporate overt objectives, and engage students in the complex thinking skills used by practitioners. After completing the course, participants endorsed the role that authentic learning challenges and technology might afford collaboration and communication with peers and experts, multiple perspectives, higher order thinking strategies, and avenues for reflection, feedback, and revision, echoing the research of Seau Yoon et al. (2005). Through continuous exposure to authentic problems in each element of the course design, participants were able to look past their initial perceptions of authentic problems and embrace their ability to situate content in the world of practitioners.

Participants created five lesson designs in the course in which they were expected to integrate various technology tools that supported the historical thinking skills necessary to solve their defined authentic problem. When developing their lesson plans, participants struggled to understand and address the affordances of the tools they integrated. Affordance-based design was an entirely new concept to all of the participants, who had previously expressed a view of technology integration as specific

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tool integration based on what they were comfortable and confident using. In early

lesson designs, three of the participants struggled to grasp the concept that they needed to

address and explain how the affordances of various technology tools supported the

historical thinking skills used in the lesson. Instead, these participants were often

integrating tools they were comfortable with or perceived as easy for students to use

regardless of the affordances of the tool. After discussion, feedback, and encouragement

that occurred at the conclusion of each lesson design iteration, these participants

developed an understanding of affordance-based design and incorporated these

considerations in many of their final lesson plans.

Angeli and Valanides (2009) argued that teacher educators "need to explicitly

teach how the unique features or affordances of a tool can be used to transform a specific

content domain for specific learners" (p. 158). EDIT 504 was designed to accomplish

this goal, and results of the study furthered this goal and pointed to the ways in which

repetitious lesson designs and extensive feedback can help provide the explicit teaching

mentioned by Angeli and Valanides. As the participants engaged in each lesson design

iteration, their ability to recognize a tool's affordances and specify how those affordances

supported the thinking skills needed in the lesson improved.

Pamuk (2012) argued for preservice teacher education programs that provide

"guidance in terms of how to achieve effective technology integration into...teaching" (p.

436). Two participants who had no practical professional experience and only limited

experience designing lessons explained that in their methodology courses they had very

little opportunity to design and develop their own lesson designs. While the course was

designed to provide participants with more diverse design opportunities, the results of the study indicated that this might not be enough for preservice teacher learners who have no practical experiences in education or any other profession outside of their mandatory methodology courses. Providing opportunities for participants to implement their lesson designs so that they can reflect on their successes and failures may be necessary to continue their growth and development as future educators.

The other three participants had prior professional experiences not related to teaching and lesson design. Despite their lack of teaching experience, two of the three participants were able to create quality lesson designs from the outset of the course. These participants were exposed to the same design experiences, design examples, and feedback through class discussions, and yet they were able to immediately design lessons that were far superior to their fellow participants. While there is no guarantee that their professional experiences influenced their lesson design abilities, it was a common thread that these participants shared that the two participants who struggled did not.

Preservice teacher learners' experiences in the course. Collison et al. (2000) found that the online environment can offer participants a chance to reflect deeply on course content and analyze situations over multiple days. The feedback from participants supported these findings as participants specifically noted how the design pattern enabled these opportunities to reflect and analyze. Course material was specifically designed around a repetitious design pattern that introduced each historical thinking strand through a design experience, three design examples, and a lesson design challenge. Participants found that the design pattern used during the course supported their individual learning

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styles and enabled them to focus on course content rather than becoming overwhelmed by coursework. Participants indicated that this pattern allowed them to focus on new content rather than mastering a new learning structure each module. By focusing on content rather than structure, participants were able to develop expertise over the material and were given direct and frequent feedback to help address misconceptions. As participants encountered new and unfamiliar concepts in the course, they were not required to navigate unfamiliar course structures which enabled a focused effort on course material by the participants.

In each module, participants were asked to engage in two discussion boards that aimed to expand on their understanding of module readings and design experiences and design examples. The discussion boards were designed to provide participants with "the opportunity to discuss and reflect on technology integration throughout their teacher education coursework" (Funkhouser & Mouza, 2013, p. 283). However, as noted by the participants, the prompts were repetitive and did not engage them in deep conversation about course concepts and ideas. Participants felt that the frequency of new discussions did not support the time necessary to provide feedback before being forced to move on to new discussions. While Kay (2006) argued that discussions emulate a style of collaboration that is ideal among preservice teacher learners, the results of the study do not support these conclusions. However, this lack of collaboration and reflection through discussions may have been caused by the structure of the discussion boards and the prompts used to initiate conversation rather than the process of discussion and reflection.

The course was designed in an asynchronous learning environment to provide participants with extended learning opportunities that exposed them to the concepts being taught in the course. As participants reflected on their time in the course, they specifically noted how beneficial it was to learn the course concepts through a technology-mediated interface. All of the participants expressed that this was an additional learning opportunity for them, and they found this experience to be very supportive of their learning.

Budd et al. (2013) stated that an asynchronous learning environment could provide preservice teacher learners a chance to engage with tools in the context of a learning environment. A number of the participants endorsed this approach and noted how they appreciated the chance to work with and explore the tools as they worked through course content. As they wrestled with new conceptual ideas, they were being exposed to course content in a manner that was designed using the same lesson design principles that they were being taught.

The design decisions that informed the course structure and design used the same principles of design that the participants were being taught. The course was structured in a manner that provided participants with an authentic challenge that framed each module, a design experience that incorporated historical thinking skills from the perspective of a classroom student, three design examples that exposed students to the design process of social studies teachers, and a design challenge that asked participants to incorporate technology to support historical thinking skills to solve an authentic problem in the social studies. The use of various technology tools throughout each module were chosen based

on the tools' affordances and how those affordances supported certain thinking skills and engagement with content which provided participants with practical exposure to integrated technology. Each participant's reflection on the course indicated that the learning opportunities provided by the course supported the research of Pamuk (2012) who argued for preservice teacher education programs that model effective uses of technology integration and carefully design case studies and exercises to help provide preservice teacher learners with perspective and guidance in how to effectively integrate technology into teaching.

Each module concluded with a lesson design challenge that asked participants to design a lesson for a specific curriculum and content standard. All of the participants noted how beneficial it was to design across multiple social studies curriculum while being provided with extensive feedback that connected course content and concepts to their implemented lesson designs. The lesson design challenges served a number of purposes including an opportunity for preservice teacher learners to practice integrating technology into lesson designs to help improve their attitudes toward integrated technology (Gronseth et al., 2010). All of the participants reflected positively on these lesson design challenges and noted that the experience afforded them the opportunity to practice designing for technology in a way that was unfamiliar. Chien, Change, Yeh, and Chang (2012) argued for a learning environment for preservice teacher learners where they are able to practice integrating technology into their curriculum. Feedback from participants supported the ideas behind this learning environment and extended it to an environment where participants designed multiple lessons and received "guidance in

terms of how to achieve effective technology integration into...teaching" (Pamuk, 2012, p. 436).

Wineburg (2001) noted that "No one who prepares to become a social studies teacher can know all of the subject he or she may be called on to teach" (p. 149). The lesson design challenges forced participants to explore all aspects of social studies instruction, and participants positively reflected on this opportunity. One of the participants specifically extended on the ideas of Wineburg as she noted that she frequently designed lessons in content areas she was comfortable with to make it easier but noted that after her participation in the course, this approach had limited her experience and skills in designing lessons. This experience was shared by all of the participants who found it extremely useful to be provided with a content strand so they could focus on designing a lesson that framed the content in an authentic problem where technology tools were integrated based on how they afforded historical thinking skills.

Summary. The literature indicated that preservice teacher education programs should prepare preservice teacher learners to integrate technology in their future classrooms. This included providing preservice teacher learners with the opportunity to practice integrating technology situated in their content specialty, which is not traditionally provided in preservice teacher education programs. EDIT 504 was designed to solve the challenges indicated across multiple fields of research, including preservice teacher education, technology integration, and social studies methodology rather than using the traditional structure of preservice teacher education. Preservice teacher learners in EDIT 504 were given the opportunity to engage with technology, social studies, and

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complex thinking skills situated in the content area. They found the opportunity to experience technology integrated lessons from the perspective of classroom students, discuss the process of integrating technology, and practice integrating technology into lesson designs across multiple fields of social studies content to be incredibly beneficial to their learning and preparation as future classroom practitioners. The results of the preservice teacher learners' lesson designs indicated that these students were able to successfully design technology integrated lessons that used the affordances of tools to support the complex historical thinking skills needed to solve problems situated in the context of authentic problems. EDIT 504 was unique in its approach, combining multiple fields of academic study to address a problem recognized across the academic community that challenged the traditional structure of preservice teacher education programs and confirmed the need to restructure technology education in preservice teacher education programs as identified in the research.

The design of the course guided preservice teacher learners to look at technology through a new lens framed around classroom instruction and social studies education. The positive results experienced by preservice teacher learners in EDIT 504 show that it is possible to effect change over the traditional structure of preservice teacher education programs and successfully integrate technology education into these programs. The course used an online structure to alleviate enrollment challenges potentially faced by preservice teacher learners who may be completing their teaching internships or universities with physical classroom limitations while maintaining small group instruction. Additionally, it is challenging for preservice teacher education programs to

maintain a staff of classroom practitioners who are experts in their content specialty and have experience integrating technology effectively in the classroom. EDIT 504 used the experience of graduate researchers to provide their expert lens both in the design of the course content as well as course instruction of preservice teacher learners in their domain specialty. The results of the study indicate the necessity of preservice teacher education programs to accept the challenges of redesigning their preservice teacher technology to meet the needs of their preservice teacher learners. Successfully redesigning and situating preservice teacher technology education enables preservice teacher learners to develop confidence in their ability to design technology integrated lessons that support the use of complex thinking skills to solve problems situated in the content.

Recommendations

   Recommendations for preservice teacher education programs. The results of the study indicate a number of strategies to make preservice social studies teacher technology education more impactful for preservice social studies teacher learners. These include:

- Preservice teacher learners should be provided with multiple opportunities to design lessons that ask them to incorporate technology in a way that supports the use of complex historical thinking skills to solve authentic problems. These design opportunities should be frequent and build upon preservice teacher learners' evolving understanding of technology and pedagogy while challenging them to implement designs in multiple content areas. Additionally, these design opportunities should be critiqued

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with in-depth feedback that supports preservice teacher learners' growth in

lesson design.

- Preservice teacher learners should be given an opportunity to implement

  their designs to continue their growth in understanding how to

  successfully integrate technology into the social studies curriculum.

  Preservice teacher learners who lack professional experience may benefit

  from this opportunity to develop an understanding of how their design

  choices are implemented in a learning environment.

- Preservice teacher education programs should expose preservice teacher

  learners to technology tools in the context of learning environments.

  Additionally, Preservice teacher education programs should expose

  preservice teacher learners to the design decisions that reveal the

  affordances of the various tools selected. These experiences can continue

  into discussions about lesson designs that incorporate technology to

  support historical thinking skills. However, care should be taken to

  structure these discussions if they are to occur in asynchronous discussion

  boards.

Recommendations for researchers. The results of the study inform a number of

recommendations for researchers. Recommendations include:

- Research should continue to examine preservice teacher education

  programs that seek to connect technology, pedagogy, and content

  knowledge. Researchers can extend this study to focus on a larger

audience of preservice teacher learners through quantitative research methods. By expanding on the research population, researchers can explore the findings of this study and determine if the findings expand to a broader generalization.

- Researchers can explore the long-term impact of the course on preservice teacher learners by conducting interviews with participants after they have practical classroom teaching experience. A longitudinal study would provide researchers the opportunity to determine how impactful the course design was on permanently changing participants' attitudes and beliefs toward integrating technology.

- Researchers should more closely and in depth study the role that previously established attitudes and believes have on the manner through which participants incorporated course content into their thinking framework. Participants' established attitudes and beliefs impacted their willingness to change, accept new conceptual ideas, and incorporate course concepts into the way they thought about technology. Researchers could design a course that seeks to explore participants established attitudes and beliefs and examine how those attitudes and beliefs can be altered prior to addressing the interaction of technology affordances, technology integration, and content learning.

- By examining the role that feedback plays in influencing change, researchers have an opportunity to use the same design from a different

perspective. Throughout EDIT 504, preservice teacher learners were

given in-depth, complex feedback on their lesson designs. The feedback

provided preservice teacher learners the opportunity to improve lesson

design, but was not an element of EDIT 504 that was studied in this

research design. Researchers could use the same course and study design

to examine the impact that feedback has on developing preservice teacher

learners.

- Research should continue to understand the divide between digital natives

  and digital immigrants. While research continues to explore how students

  and teachers interact across this digital divide, the findings of this study

  indicate that the successful integration of technology by teachers,

  regardless of their digital moniker should be further researched to develop

  a successful process for technology integration into lesson design.

EDIT 504 was grounded in literature that called for preservice teacher education

programs to prepare preservice teacher learners to integrate technology into lesson

designs. The results of the study show that successful instruction of preservice teacher

learners is possible using a course design that provides the preservice teacher learner the

opportunity to experience integrated technology, explore teacher rationale behind

integrated technology, and practice lesson design that integrates technology to support

complex thinking skills situated in the content. Using this course design, preservice

teacher learners' attitudes and beliefs towards technology in schools and in the social

studies learning environment can be positively affected, leading them to develop

confidence and openness towards the use of instructional technology to support student

learning in the social studies classroom.

APPENDIX A

Module and Historical Thinking Skill	Module Design Experience	Module Design Example Titles and Curriculum	Module Design Challenge
Module 1 Historical Chronology	Google Earth Tour Travel Agent • Create a Tour Guide of the Silk Road for a wealthy client	• U.S. GDP Growth o Economics • Road to Civil Rights o US History • Supreme Court History o Government	Ancient River Valley Civilization Lesson
Module 2 Historical Comprehension	The Fall of Constantinople Art Blog • interpret art for perspective and style, then create an art history blog	• Religious Expression in Renaissance Europe o World History II • 1st Amendment and Liberties o Government • Growth of the Asian Tigers o Economics	American Leaders and Legends Lesson
Module 3 Historical Analysis and Interpretation	Creating a World's Constitution Spreadsheet • Use a database on constitutions to create a world constitution	• Analyzing the Growth of World Religions o World History I • Fireside Podcasts o US History • This Day in History Doodles o Any	Managing a Complex School Budget Lesson
Module 4 Historical Research	The Atomic Bomb Briefing Paper • Examine the use of the atomic bomb using primary sources	• Evaluating a History Textbook o World History I • Creating an Immigration Flyer o Civics • Environmental Action Research o Human Geography	20th Century Genocides Lesson
Module 5 Historical Issue-Analysis and Decision-Making	The Oregon Trail Journey and Map • Research the decisions facing the Oregon Trail journey and take your own journey	• Creating a Civilization o World History I • Law Firms and the Bill of Rights o Government • Road Trip around America o US History	Civic Participation and Engagement Lesson

APPENDIX B

Technology is a broad concept that can mean a lot of different things. For the purpose of this questionnaire, technology is referring to digital technology/technologies—that is, the digital tools we use such as computers, laptops, iPods, handhelds, interactive whiteboards, software programs, etc. Please answer all of the questions, and if you are uncertain of or neutral about your response, you may always select "Neither agree nor disagree."

Strongly Disagree = SD | Disagree = D | Neither Agree/Disagree = N | Agree = A | Strongly Agree = SA

2. I know how to solve my own technical problems.
SD D N A SA

3. I can learn technology easily.
SD D N A SA

4. I keep up with important new technologies.
SD D N A SA

5. I frequently play around with the technology.
SD D N A SA

6. I know about a lot of different technologies.
SD D N A SA

7. I have the technical skills I need to use technology.
SD D N A SA

8. I have had sufficient opportunities to work with different technologies.
SD D N A SA

9. I have sufficient knowledge about social studies.
SD D N A SA

10. I can use a historical way of thinking.
SD D N A SA

11. I have various ways and strategies of developing my understanding of social studies.
SD D N A SA

12. I can select effective teaching approaches to guide student thinking and learning in social studies.
SD D N A SA

13. I know about technologies that I can use for understanding and doing social studies.
SD D N A SA

14. I can choose technologies that enhance the teaching approaches for a lesson.
SD D N A SA

15. I can choose technologies that enhance students' learning for a lesson.

SD D N A SA

16. My teacher education program has caused me to think more deeply about how technology could influence the teaching approaches I use in my classroom.
SD D N A SA

17. I am thinking critically about how to use technology in my classroom.
SD D N A SA

18. I can adapt the use of the technologies that I am learning about to different teaching activities
SD D N A SA

19. I can teach lessons that appropriately combine social studies, technologies, and teaching approaches.
SD D N A SA

20. I can select technologies to use in my classroom that enhance what I teach, how I teach, and what students learn.
SD D N A SA

21. I can use strategies that combine content, technologies, and teaching approaches that I learned about in my coursework in my classroom.
SD D N A SA

22. I can choose technologies that enhance the content for a lesson.
SD D N A SA

APPENDIX C

Interview #1
Pre-Course Interview

Introduction: The purpose of this brief interview is to help me understand how your perceive technology, both in your personal life and your future life as an educator. I want you to think about the way you see technology, its uses, and how you see it used in the classroom. This will help me to understand how you currently view technology in education.

0a) Where are you in the graduate program? Have you completed your methods courses?
0b) Do you have any teaching or substitute teaching experience?
0c) What is your Age? Where are you in your career (Career Switcher, Grad student)?

1) I would like you to think about "A Day in your Life with Technology." Describe what types of technology you use and how you use them throughout the day.

     1a) Do you feel confident when you use all the technologies you use to support your daily life?

     If yes, Why do you think you feel confident?

     if no, which technologies are you not fully confident using?

2) In your opinion, how important is technology in our world today?

     2a) How has technology helped the world progress and how has it caused challenges?

     2b) What role do you believe technology will play in the world in 5 years? 10 Years?

3) Now, let's talk about technology and your experience in K-12 education. Describe your overall experience using technology in K-12 education

3a) Are there any specific experiences from your K-12 education that stand out?

4) Think about your future Social Studies classroom. How do you envision technology being used in your future classroom? Used by you? Used by your students?

4a) What experiences have influenced your vision about technology use in your classroom?

5) Let's talk about the lesson planning process. Tell me what steps you take when you develop a lesson. (If No Lesson Experience: What considerations do you think are important in lesson plan development)

5a) In your opinion, what do you think is the most important thing to consider as a first step in planning a lesson?

6) What do you hope to learn in this course?

6a) Have you had the opportunity to review the course syllabus? If Yes continue to 7, if No, end interview

7) What concerns do you have about this course?

7a) What will be your strengths in this course?

Interview #2
Post-Course Interview

In EDIT 504, you were asked to design a variety of lessons for different social studies content. In each lesson, the goal was to use the ACTS framework to create an authentic problem for students where they would use technology to engage in historical thinking skills to create a final product. I want you to think about these lesson plans for the next three questions.

1.   Did participating in EDIT 504 change the way you think about technology in schools? If answer yes, how/in what ways with additional probing questions as come up. If answer no, what were your beliefs? Why do you think your experiences in 504 did not result in changes with additional probing questions as come up.. Ask for examples!

2.   Did participating in EDIT 504 change your ideas about how technology could or should be used in teaching social studies? If answer yes, how are your ideas different; in what ways did they change with probing questions as they come up. If no, what were your original thoughts about technology's role in teaching social studies? Why do you think your experiences in 504 did not result in changes with additional probing questions as come up. Ask for examples!

3.   Did participating in EDIT 504 change the way you think about designing lesson plans? If answer yes, how with additional probing questions as come up. If answer no, how do you design lessons? Why do you think your experiences in 504 did not result in changes with additional probing questions as come up. Ask for examples! Will probably get lots of yes and no answers. Use both options above J

Now we are going to look at the entire EDIT 504 course and talk about your experiences throughout the course.

4.   As you reflect on the course as a whole including the introductory modules and the five social studies modules, what concepts did you learn? Which of those concepts did you find particularly helpful in thinking about technology and social studies teaching? What concepts did you learn about but were not very useful to you.

4) I want you to think about the reason that you signed up for EDIT 504 and the expectations you had before taking this course. In what ways did the course meet your expectations?   In what ways did the course not meet your expectations?

5. The social studies portion of EDIT 504 was organized around the five principles of historical thinking. Each module focused specifically on one principle, so, for example, the first module looked at historical chronology while the fourth module was historical research.. Did organizing EDIT 504 around the principles of Historical Thinking help you learn about technology, lesson design, and teaching social studies? If answer yes, how with probing questions. Ask for examples! If answer no, why with probing questions. Ask for examples! Will probably get lots of yes and no answers. Use both options above J

6) At the beginning of each module, you were asked to read a number of articles about a historical thinking concepts. In the 2nd module, you read articles about Historical Comprehension and how it can be applied in the classroom while the third module used articles focused on historical analysis and interpretation. How helpful were the readings in introducing each historical thinking concept? Did the discussions help you understand each habit of mind?

7) The second activity in each module asked you to participate in a design experience as though you were a high school student. So, for instance, you created a Google Earth Tour in the 1st module and a briefing paper in the 4th module. Were these design experiences helpful in understanding how technology might be integrated in lessons related to each historical thinking concept? If answer yes, how with probing questions as they come up. If answer no, why with probing questions as they come up. Ask for examples! Will probably get lots of yes and no answers. Use both options above J

8) In each module, you were given three design examples to read that described a teacher integrating technology tools to support a specific historical thinking skill. These examples covered various social studies curricula such as history, government, economics, and more. Were the design examples helpful in introducing you to possible technology tools that can be used in social studies classrooms to promote student learning? ? If answer yes, how with probing questions as they come up. If answer no, why with probing questions as they come up. Ask for examples! Will probably get lots of yes and no answers. Use both options above J

9) Each module concluded with a task to design a lesson plan around a predetermined SOL strand. For example, the last module asked you to create a lesson plan for a Government & Civics lesson on civic participation whereas the first module . Were creating the lesson plans useful learning experiences in helping you think about designing lessons that integrate technology and learning in the social studies? ? If answer yes, how with probing questions as they come up. If answer no, why with probing questions as

they come up. Ask for examples! Will probably get lots of yes and no answers. Use both options above J
10) This course was offered in an online format. What were the good attributes of your learning in this format? What were some of the challenges associated with the online format? Would you recommend continuing with this format?

11) What else would you like me to know that you haven't already told me?

EDIT 504 Lesson Plan Rubric

	Exceeds Expectations	Meets Expectations	Needs Improvement
Lesson Overview			
1) Lesson Plan Identifiers	*N/A*	*All 3 lesson identifiers (lesson title, course/subject, grade level) are clearly presented and appropriately related*	*Identifiers are absent or identifiers (lesson title, course/subject, grade level) are presented but not appropriately coordinated or applied*
2) Standards and Objectives	*N/A*	*Clearly presented, appropriately selected, creatively incorporated in the lesson plan*	*Not included and/or poorly selected, unclear relationship to lesson*
3) Context of Lesson	*N/A*	*Well presented, clearly articulated, context described represents appropriate positioning in curriculum sequence*	*Not clearly articulated, inappropriate or unclear positioning in curriculum sequence*
4) Summary of Lesson	*Creatively and completely captures the essence of the lesson*	*Provides a summary of the lesson but is not complete and/or comprehensive*	*Not present or does not adequately capture the essence of the lesson*
5) Resources/ Materials	*Creatively selected and described, backup plans incorporated, can be realistically obtained/accessed*	*Present but availability questionable, backup plans not clearly articulated*	*Not present and/or inappropriately selected and/or not feasible*

Lesson Details

6)	**Habit(s) of Mind**	*Insightfully identifies, describes, and justifies habit(s) of mind addressed by the lesson; lesson structure and habit(s) are creatively connected in the lesson*	*Identifies and describes habit(s) of mind addressed by the lesson; lesson structure and habit(s) are realistically and appropriately connected in the lesson*	*Does not or poorly identifies and describes habit(s) of mind addressed by the lesson; lesson structure does not support habit(s) of mind targeted*
7)	**Rationale for Technology Integration**	*Insightfully identifies, describes, and justifies technology selected for the lesson; lesson structure and technology choices are creatively connected in the lesson*	*Identifies and describes technology choices for the lesson; lesson structure and technology choices are realistically and appropriately connected in the lesson*	*Does not or poorly identifies and describes technology choices for the lesson; technology choices do not support targeted goals*
8)	**ACTS**	*All five elements comprehensively included and described; elements fit together as a whole; lesson is insightful and engaging*	*All five elements included but descriptions are not complete, some elements do not fit together; lesson is adequate but not creative*	*Elements missing, elements do not fit together; lesson is not structured to achieve learning goals*
9)	Implementation/ Sequence	*Implementation plan fits well within the structure of instruction, is well paced, is creatively planned with sufficient time to accomplish*	*Implementation plan is present, some inconsistencies with instructional goals, timeframe may be inappropriate*	*Implementation plan is incomplete, not realistic for classroom implementation, inappropriately addresses curricular standards*
10)	Evaluation Plan	*Comprehensively captures student learning outcomes*	*Adequately captures most student learning outcomes*	*Does not provide or inadequately provides for a strategy for capturing student learning outcomes*

APPENDIX F

Office of Research Integrity and Assurance

Research Hall, 4400 Univeristy Drive, MS 6D5, Fairfax, Virginia 22030
Phone: 703-993-5445; Fax: 703-993-9590

DATE: November 25, 2013

TO: Priscilla Norton
FROM: George Mason University IRB

Project Title: [538895-1] Exploring Preservice Teacher Education Focused on Connecting
                     Technology Use and Historical Thinking in the Social Studies Classroom: A
                     Case Study

SUBMISSION TYPE: New Project

ACTION: DETERMINATION OF EXEMPT STATUS
DECISION DATE: November 25, 2013

REVIEW CATEGORY: Exemption categories 1 & 2

Thank you for your submission of New Project materials for this project. The Office of Research Integrity
& Assurance (ORIA) has determined this project is EXEMPT FROM IRB REVIEW according to federal
regulations.

Please remember that all research must be conducted as described in the submitted materials.

Please note that any revision to previously approved materials must be submitted to the ORIA prior to
initiation. Please use the appropriate revision forms for this procedure.

If you have any questions, please contact Bess Dieffenbach at 703-993-4121 or edieffen@gmu.edu.
Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within George Mason
University IRB's records.

APPENDIX G

Email Script #1

[Student Name]

You are enrolled to take EDIT 504 during the Spring 2014 semester. This course is newly designed at George Mason University and is currently being researched to examine how the course impacts preservice teachers' perception and use of technology in the Social Studies classroom. As a preservice teacher in Social Studies education, we are interested in your participation in this research study to help improve the course and develop a better understanding of how best to support Social Studies teachers before they enter the classroom. Participation in this study is completely voluntary and will not limit your progress in the course. All we ask to participate is a small time commitment to complete 4 short surveys, which will take approximately 1 1/2 hours total as well as sit for 2 hour long interviews. All of your personal information will be kept confidential and pseudonyms will be used in the research study to protect your identity. Please see the attached informed consent document for more information.

If you are interested in participating, please navigate to the first survey at: [survey link]

Your ID Number for this survey is [ID Number]

Thank You,

Michael Crochet

Exploring Preservice Teacher Education Focused on Connecting Technology Use and Historical Thinking in the Social Studies Classroom: A Case Study

INFORMED CONSENT FORM

RESEARCH PROCEDURES
This research is being conducted to explore preservice Social Studies teacher's experiences in a course connecting technology use and historical thinking in the Social Studies classroom. If you agree to participate, you will be asked to take 4 surveys total, 2 surveys before the course, which will take approximately 45 minutes, and 2 at the end of the course, again taking 45 minutes. You also agree to be interviewed by phone twice, once at the beginning of the course and once at the end with each interview taking 1 hour. In addition to the direct participation, your submitted activities in the discussion boards and lesson plans will be analyzed by the researchers. These assignments do not require extra participation as they are part of the regular class time commitment.

RISKS
There are no foreseeable risks for participating in this research.

BENEFITS
There are no benefits to you as a participant other than to further research in preservice education aimed at connecting technology use and historical thinking in the Social Studies classroom.

CONFIDENTIALITY
The data in this study will be confidential. No personally identifiable information will be accessible by anyone but the researcher. A code will be used in place of identifiers on the surveys, discussion board posts, and lesson plan rubrics and the researcher will use an identification key to access data. Pseudonyms will be used for interviews to ensure participant anonymity. Only the researcher will have access to the identification key.

PARTICIPATION
Your participation is voluntary, and you may withdraw from the study at any time and for any reason. If you decide not to participate or if you withdraw from the study, there is no penalty or loss of benefits to which you are otherwise entitled. There are no costs to you or any other party. Participation in the study is not required for enrollment in the course.

ALTERNATIVES TO PARTICIPATION
There will be no impact or alternatives if you wish not to participate. Non-participation will not impact your course study or interactions.

CONTACT
This research is being conducted by Michael Crochet, a doctoral candidate in the College of Education and Human Development at George Mason University. He may be reached at 703-209-7177 and/or his advisor Dr. Priscilla Norton at 703-993-2015 for questions or to report a research-related problem. You may contact the George Mason University Office of Research Integrity & Assurance at 703-993-4121 if you have questions or comments regarding your rights as a participant in the research. This research has been reviewed according to George Mason University procedures governing your participation in this research.

CONSENT
The George Mason University Institutional Review Board has waived the requirement for signing the consent form. However, if you would like to sign a consent form prior to participating in the study, please contact Michael Crochet at 703-209-7177 or mcrochet@gmu.edu.

APPENDIX I

Email Script #2

[Student Name]

Thank you for taking the time to complete our first short survey. Your participation in the study is extremely valuable and we greatly appreciate your time commitment. In addition to the web-based surveys, we will be completing two hour-long interviews. The first will occur before the course begins while the second interview will occur after the course has been completed. To allow you flexibility, we have included a link to a scheduling application that will allow you to pick a time that is most convenient for you. In the description box, please enter your preferred method of communication; Skype, Google Hangout, or Face-to-Face and we will accommodate your needs.

[password protected web-based scheduling app link]

Once your time has been received, I will follow-up with information on how we will conduct the interview.

Thank You,

Michael Crochet

EDIT 504 Lesson Plan Template

Introduction to Lesson Plan

     a) Title
     b) Course/Grade Level
     c) Standards and Objectives
     d) Context of Lesson: *What leads in, what follows, the lesson?*
     e) Summary of the Lesson: *Write a short summary of the lesson after you have finished the details section.*
     f) Resources/Materials Needed

Lesson Details

Habit of Mind: *What targeted and what secondary things might be happening? How is the Habit(s) of Mind expressed in the lesson? How will students demonstrate their understanding of the target Habit(s) of Mind?*

Rationale for Technology Integration: *What technology will you use? What is your rationale for selection? How does it support the selected Habit(s) of Mind?*

Lesson Elements:

     a) Authentic Problem and Exit Experience
     b) Clear Outcome
     c) Thinking and Design Skills
     d) Software Skills

Implementation/Lesson Sequence

Evaluation Plan

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