Technology Integration for Common Core State Standards Implementation: Developing Differentiated Professional Development based on the Concerns-Based Adoption Model

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Technology Integration for Common Core State Standards Implementation:

Developing Differentiated Professional Development based on the
Concerns-Based Adoption Model

A Dissertation by

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Submitted in partial fulfillment of the requirements for the degree of
Doctor of Education in Organizational Leadership

December 2014

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December 2014
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ACKNOWLEDGEMENTS

For Austin and Robby, my sun and my moon. They are truly my greatest work and my greatest gifts to the world. They now know that dreams do come true with hard work, determination, and belief in yourself.

To all of the children born into illness, neglect, and poverty… never stop believing that you can indeed grow up and out of the hand in which you were dealt. You too can be a doctor someday.

I would like to thank my husband and sisters for their patience and encouragement throughout this process. Without Mark’s “this will not last forever mantra,” I may have leapt over the edge on more than one occasion. My amazing cohort, the absolute best group of cheerleaders ever. Many tears have been shed in our little circle. These people are my forever friends and hold special places in my heart.

Finally, I am grateful for the guidance and support of my committee members. Dr. Capellino shared enthusiasm for my topic, helped me think through difficult areas, always made me laugh, and never let me feel alone on this path. Dr. Shean willingly worked with me very early in this process when my topic was only a vague blur in my head. And Dr. Goodman, whom I truly adore. As my mentor throughout the doctoral program, she filled the role of support provider (and sometimes parent) that was needed more than she will probably ever know.

This journey has been arduous, but it is my journey, and I would not trade one moment for anything.

“Nothing can dim the light which shines from within.” –Maya Angelou
ABSTRACT

Technology Integration for Common Core State Standards Implementation:
Developing Differentiated Professional Development based on the Concerns-Based Adoption Model

By Tami Boatright

Teachers must learn how to integrate technology for CCSS implementation in an educational environment tasked with preparing 21st century students to not only survive, but thrive in a knowledge-based global society. The changes required for 21st century learning to prepare 21st century students is transformational in nature and represents a paradigm shift for many teachers. The purpose of this quantitative study was to examine the differences in teachers’ Stages of Concern with integrating technology for implementation of CCSS according to age, gender, and years of teaching. In addition it was the purpose of this study to use information obtained from the examination of differences to inform differentiated professional development plans and provide support for teachers. Integrating technology for instructional purposes can seem daunting for teachers not born into the digital age. This inexperience and lack of knowledge may lead to resistance and stress. The Concerns-Based Adoption Model (CBAM) recognizes that innovation success must be reached through understanding and acceptance of teachers’ concerns. Seven Stages of Concern (SOC) were identified within the CBAM (unconcerned, informational, personal, management, consequence, collaboration, and refocusing). These SOC are clustered into four levels (unrelated, self, personal, task, and impact). The Stages of Concern Questionnaire (SoCQ), a component of the CBAM, was utilized to gather concerns’ data from teachers. After examining the differences in concerns according to age, gender, and years of teaching experience, recommendations
were made regarding professional development plans and support structures. Teachers developmentally work through intrinsic concerns related to self and task, before moving onto extrinsic concerns regarding collaboration and the impact of change on students. Without this recognition and understanding of teachers’ Stages of Concern, desired impacts from integrating technology for CCSS implementation will neither be attained nor sustained.
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CHAPTER I: INTRODUCTION

Technology is dramatically changing social interactions, business functions, and the educational environment. Facebook has more than one billion active users; 67% of internet users in the United States are on Facebook with 82% in the United Kingdom (Business Insider, 2013), most college students will take online classes in 2014 (Nagel, 2009), the percentage of people telecommuting for work grew by 79.7% between 2005 and 2012 (“Global Workplace Analytics”, 2013) and school districts were projected to have 1:1 computing capabilities for 50% of their students in 2010 (Greaves & Hayes, 2008). Schools now have multiple forms of technology in classrooms as well as computer labs and technology carts. Technology has experienced exponential growth and affected all facets of the world today. It has changed not only what we need to learn, but the way we learn.

In their book, That Used to Be Us: How America Fell Behind in the World it Invented and How We Can Come Back, Friedman and Mandelbaum (2011) state:

Two decades after the Cold War came the era of revolution in Information Technology. It began in the United States and spread around the world…It gave all Americans greater access to information, entertainment, and one another and to the rest of the world as well. (p. 18)

The life of today’s students are immersed in technology that provides access to information and resources 24 hours a day, seven days a week, enabling them to collaborate and participate with people from all over the world (National Education Technology Plan, 2010). Opportunities for learning are instantaneous and borderless. The proliferation of technology has ushered in new Common Core State Standards (CCSS),
which delineate what every student should know to be successful global citizens ("Center for K-12," 2012), and a revised accountability system that will require every student to complete a yearly assessment utilizing a computer platform (Smarter Balanced Assessment Consortium, 2014). The use of technology in the life of today’s student is not yet aligned with the technology use found in K-12 schools. Even though modern technology has been in classrooms since introduction of the first computers in 1983, many of today’s teachers fail to integrate technology into their curriculum in any meaningful way (Bataineh & Abdel-Rahman, 2006). Since public schools are responsible for preparing students to be productive members of society, schools must change to produce students with 21st Century skills to meet the demands of the increasing global future.

According to the International Society for Technology Standards in Education (ISTE) strategic planning is needed to leverage technology to transform teaching and learning due to the massive influx of technology (ISTE, 2010). State and federal money provided to school districts to purchase and implement technology is often tied to specific mandates and grants which require local school districts to develop strategic technology plans (No Child Left Behind State Technology Plan, 2006). Components of a technology plan should include the following items as a five year course of action: Vision for educational technology, curriculum integration, professional development, community engagement, infrastructure design, roles and responsibilities, budget summary, strategies for funding, and a method for evaluation (Byron & Bingham, 2001). Consistent components between plans do exist; however, plan developers do not always include representation from curriculum and instruction experts versed in research based teaching
and learning strategies (Byron & Bingham, 2001). Furthermore, as stated by Byron and Bingham, many plans lack a detailed component or plan for professional development that covers the broad range of skills teachers need to effectively integrate technology into their instruction (2001). This detailed plan must also address the reality that administrators and teachers must significantly alter the traditional learning environment, which is a major paradigm shift for many (Blattner, 2012). In order for the effective implementation of change to occur, a clear plan for teachers to follow and understand must be developed. According to the National Center for Education Information (Feistritzer, 2011), 31% of the teachers in the U.S. are Baby Boomers, 49% are part of Generation X, and 21% are Generation Y. Therefore, nearly 80% of the teaching population was not born into the technological age or taught using the technology available today. Providing technological access to students without trained and skilled instructors does not ensure improved student achievement (Byron & Bingham, 2001).

According to Gandolfo (1998), there often is a resistance to change with any new innovation. Teachers can suffer feelings of loss for established traditions as they begin to embrace new ideas and ways of thinking about teaching and learning. As stated by Green (2000), when considering new technology implementation, “challenges have less to do with products and more to do with people” (p. 2). Therefore while introducing technology for instructional purposes, it is important to develop teacher skills and provide support structures; more importantly, the effective implementation of classroom technology may depend on addressing the perceptions and attitudes of teachers involved in the innovation implementation (Baldwin, 1998; Bradshaw, 2002; Dusick & Yildirim, 2000; Gray, 1997; Rogers, 2000).
Background

Over the last 30 years, advances in technology have led to a generation that has constant access and uses technology daily. During the last decade, technological advances have created profound changes in the global marketplace (Partnership for 21st Century Skills, 2008). Our economy is driven by innovation and knowledge. Diverse workplaces rely on social networking and collaborative relationships. It has become increasingly clear that in order for students to be successful in this society they must possess significantly different skills than in the past. Today’s students utilize cell phones, instant messaging, and laptops to connect with friends, family members, people with common interests, experts, and many others in their community and around the world.

“Every aspect of our education system—PreK–12, postsecondary and adult education, after-school and youth development, workforce development and training, and teacher preparation programs must be aligned to prepare citizens with the 21st century skills they need to compete” (Partnership for 21st Century Skills, 2008). This requirement is creating conditions for schools to provide graduates with the necessary technological skills. Schools must be innovative with technology to provide students with the education needed to not only survive, but thrive in a knowledge-based, global society. This demand has created the need for a paradigm shift amongst educators. Change of this magnitude will likely be faced with barriers.

The changes that are required for 21st century learning to prepare 21st century students are transformational in nature and represent a major shift of strategy, structure, systems, and technology (Anderson & Anderson, 2010). Currently, incongruity exists between the educational needs of the global society and school districts’ strategies,
organizational design, culture, behaviors and mindset. To provide students with the education needed to not only survive, but thrive in a knowledge-based, global society, “a profound breakthrough” in school districts’ worldview about the education of students is critically important to discover the new state with which current operations must be replaced (Anderson & Anderson, 2010, p. 61).

For many teachers integrating technology into classroom instruction and daily learning activities can seem daunting. Currently, technology is often used for word processing, administrative type tasks, or to vary how instruction is delivered in the classroom (Gray, Thomas, & Lewis, 2010). The National Education Association (NEA) and the American Federation of Teachers (AFT) conducted a study in 2008 that surveyed 1,923 teachers and addressed the effectiveness of technology in K-12 classrooms. Results from the study showed that most teachers had access to computers and the internet within the classroom, however, little evidence was shown that it was being used successfully for instruction (NEA, 2008). Even though schools provide access to technology and varying levels of professional development, effective technology integration for instructional purposes is not happening in many classrooms (Bauer & Kenton, 2005).

Teachers may view technology as a separate content area to be taught instead of a tool to assist with teaching or to help students learn (Morehead & LeBeau, 2005). Teachers may ask themselves; how long will it take for me to learn this new technology, what if it fails to improve the lesson, what if I have questions about the technology during instruction, what if the computer crashes, what if the technology does not improve student learning? Without adequate training and support, these questions may remain unanswered. Left unanswered these questions create barriers to effective...
technology integration. Research on barriers to implementation have identified two levels of barriers to account for teachers struggling to integrate technology into the classroom (Ertmer, 1999). First order extrinsic barriers include lack of training and resources. Second level barriers include intrinsic factors such as unwillingness to change and pedagogical beliefs. A third barrier for technology integration was proposed by Tsai and Chai (2012), and includes teachers’ design thinking ability. This third barrier exists if a teacher is struggling to create learning activities that are differentiated based on individual student academic needs. Professional development plans should address both extrinsic and intrinsic barriers; specifically, first, second, and potentially third level barriers.

Standards and guidelines have been developed to address student’s technological literacy. ISTE (1998) developed standards that divide technological skills into six standards and clearly state that students must be proficient in the use of these tools. The infiltration of technology into the educational system has in part led to the development of the CCSS. The CCSS Initiative began in 2009 (“Center for K-12,” 2012) as an initiative to provide a clear understanding and guidelines for what students need to know in order to be fully prepared to function and successfully compete in the global economy. The CCSS fully align with the six key elements of a 21st century education, one of which includes the requirement to use 21st century tools to develop learning skills (Partnership for 21st Century Skills, 2009). Required skills for mastery of the CCSS are relevant to what professionals do in their daily work. However, this is a huge shift from the skills that have traditionally been required for students to possess and master in the current
educational system; a system driven by single answer, non-technological, multiple-choice assessments.

Due to the transformational change required for 21st century instruction, professional development plans must incorporate research based strategies for adults to learn how to instruct utilizing technology. These plans should take into consideration the relevance of change and adult learning theory and how these align with barriers to successful technology implementation. Often assumptions and stereotypes exist that are tied to gender and age that must be considered when planning for professional development to support transformational change. In a comparative case study conducted by Atkins and Vasu (2000), it was noted that schools that offer consistent, individualized support and training to teachers have increased chances for successful technology integration. A study by Christou, Eliophotou-Menon, and Philippou (2004) determined that attending to the concerns of teachers was essential to successful implementation of a new innovation. According to Musser, Hoover, and Fernandez (2008), developing a program without conducting a needs assessment can be a costly mistake with limited results. With the transformational changes occurring in education, professional development must be strategically planned, focused, and specific to support teachers in the shifts required for CCSS implementation and the integration of technology.

In order to understand the needs of teachers, including the evolution of their questions and concerns during the implementation of integrating technology for CCSS, a theoretical framework is needed to guide and clarify this process. The Concerns-Based Adoption Model (CBAM) is a model developed as a framework for understanding the change process. This model has been utilized by numerous educational researchers due to
its focus on understanding an individual’s perceptions and thoughts about an innovation (Adams, 2002; Ansah & Johnson, 2003; Casey, 2000; Casey, Harris, & Rakes, 2004; Dobbs, 2004; Gershner & Snider, 2001; Gwele, 1997; Lienert, Sherrill, & Myers, 2001; Newhouse, 2001; Signer, Hall, & Upton, 2000; Todd, 1993). Central to the CBAM framework is the assertion that facilitating change requires the understanding of the existing attitudes and perceptions of the individuals in the change process. This understanding solidifies the fact that the most critical factor in any change process is the people involved (Hall & Hord, 1987, 2001).

The Stages of Concern which were developed from the CBAM, describe how individuals feel about an innovation and perceive its usefulness and impact on their work (Hall & Hord, 1987). Individuals progress developmentally through the seven Stages of Concern (Figure 1) as they become increasingly more comfortable and sophisticated in using the new innovation. The concerns of individuals are developmental in that concerns that appear early in the innovation must be addressed before later concerns can emerge. The seven Stages of Concerns include awareness, informational, personal, management, consequence, collaboration, and refocusing, which and are grouped into four overarching categories; unrelated, self, task, and impact (Hall, George, & Rutherford, 1979). The concerns of individuals logically progress as users become more skilled with the innovation moving sequentially from unrelated, to self, to task, to impact concerns (Fuller, 1969; Hall, George, & Rutherford, 1979; Hall & Hord, 1987; Hall & Hord, 2001). In 2006, a Stages of Concern Questionnaire (SoCQ) was developed to assess what stage of concern an individual is experiencing as they implement an innovation (George, Hall, & Stiegelbauer, 2006).
Figure 1. The Seven Stages of Concern (SoC)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Self</th>
<th>Task</th>
<th>Impact</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Informational</td>
<td>Management</td>
<td>6 Refocusing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The individual focuses on exploring ways to reap more universal benefits from the innovation, including the possibility of making major changes to it or replacing it with a more powerful alternative.</td>
</tr>
<tr>
<td>2</td>
<td>Personal</td>
<td></td>
<td>5 Collaboration</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The individual focuses on coordinating and cooperating with others regarding use of the innovation.</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>4 Consequence</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The individual focuses on the innovation's impact on students in his or her immediate sphere of influence. Considerations include the relevance of the innovation for students; the evaluation of student outcomes, including performance and competencies; and the changes needed to improve student outcomes.</td>
</tr>
<tr>
<td>4</td>
<td></td>
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<td>6</td>
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The individual is uncertain about the demands of the innovation, his or her adequacy to meet those demands, and/or his or her role with the innovation. The individual is analyzing his or her relationship to the reward structure of the organization, determining his or her part in decision making, and considering potential conflicts with existing structures or personal commitment. Concerns also might involve the financial or status implications of the program for the individual and his or her colleagues.

The individual indicates a general awareness of the innovation and interest in learning more details about it. The individual does not seem to be worried about himself or herself in relation to the innovation. Any interest is in impersonal, substantive aspects of the innovation, such as its general characteristics, effects, and requirements for use.
**Statement of the Research Problem**

The teachers of today are faced with some of the most exciting and dynamic changes that have ever happened in education. Implementation of CCSS and the integration of technology are presenting challenges for teachers to redefine how students are taught and prepared to compete and successfully survive in the global society of the 21st century. The integration of technology into instruction is requiring teachers to rethink how information is delivered. It is also requiring teachers to reconsider how student knowledge and performance is assessed, and how to train students to navigate through information that is readily available and at their fingertips 24 hours a day, seven days a week (Partnership for 21st Century Skills, 2009). This transformational change can be challenging to teachers who were not born during the digital age and lack the skills to effectively integrate technology within their classrooms.

In response to the transformational change currently occurring in education, school districts are mandated to strategically plan for implementation of the CCSS; however, plans often lack differentiated professional development. A one-size fits all approach to professional development remains the norm in many districts. Although numerous studies have addressed the need and components of high quality professional...
development for teachers (DeMonte, 2013; Morehead & LeBeau, 2005; Walker, 2013; Byron & Bingham, 2001), limited research has been conducted relevant to professional development for integration of technology in CCSS implementation that considers teachers’ concerns along with age gender, and years of teaching. According to Morehead and LeBeau (2005) the majority of professional development programs have not provided teachers with the knowledge or experience to use computer technology in their classroom. The integration of technology into instruction involves more than just knowing computer technologies and software, it involves the way teachers and students approach learning. Teachers must understand how to metacognitively teach students how to deliberately think about their own learning (Partnership for 21st Century Skills, 2009). The challenge has become how best to prepare teachers for teaching and learning that integrates technology for CCSS implementation.

Although the CBAM and in particular the SoCQ have been used in numerous studies to help researchers understand the change process and how to offer support to participants along the way relative to a specific project or instructional model, a significant gap exists in the literature that utilizes the CBAM to inform differentiated professional development that address the paradigm shift occurring in K-12 education as technology must be integrated for CCSS implementation (Adams, 2002; Ansah & Johnson, 2003; Casey, 2000; Casey, Harris, & Rakes, 2004; Dobbs, 2004; Gershner & Snider, 2001; Gwele, 1997; Lienert, Sherrill, & Myers, 2001; Newhouse, 2001; Signer, Hall, & Upton, 2000; Todd, 1993). In order for students to succeed in our global society, our teachers must be adequately prepared through effective differentiated professional development programs that take into consideration teachers’ Stages of Concern.
Purpose Statement

The purpose of this study is to examine the differences in teachers’ Stages of Concern with integrating technology for implementation of CCSS according to age, gender, and years of teaching. In addition it was the purpose of this study to use information obtained from the examination of differences to inform differentiated professional development plans to address the current paradigm shift in education as technology must be integrated for CCSS implementation.

Research Questions

The study will seek to answer the following research questions:

1. Is there a significant difference in teachers’ unrelated Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?

2. Is there a significant difference in teachers’ self Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?

3. Is there a significant difference in teachers’ task Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?

4. Is there a significant difference in teachers’ impact Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?
5. What professional development opportunities and support structures are appropriate based on the Stage of Concern profile for each personal characteristic (age, gender, and years of teaching)?

**Significance of the Problem**

This study, which seeks to understand the concerns of teachers undergoing the transformational change of integrating technology for CCSS implementation, will be of value in understanding specific individual needs during this process. While several existing studies have examined the SoCQ focus on computer integration, limited research is available on CCSS implementation and technology integration. Furthermore, limited research exists that seeks to understand how age, gender, and years of teaching impact levels of concern, which may prove relevant in differentiating effective professional development opportunities.

Further, this study will provide literature to address the significant gap that exists in the research that utilizes the CBAM to inform differentiated professional development to address the current paradigm shift as technology must be integrated for CCSS implementation. According to DeMonte (2013), “Professional development is the link between the design and implementation of educational reforms and the ultimate success of reform efforts in schools” (p. 2). The performance of a school’s teaching staff determines the outcomes for student learning; therefore, professional learning opportunities must be designed to transform teaching and enhance student learning.

The results of this study have the potential to provide school districts with guidelines towards designing a well-defined plan of action for differentiated professional development and support. Through effective professional development, teachers will
have the knowledge and experience to meet the requirements of the NCLB technology criteria and prepare students with the 21st century technological literacy skills required to compete in the global society.

Lastly, during these challenging fiscal times, school districts cannot afford to spend large sums of money on professional development opportunities that do not significantly inform and alter teaching practices (Greaves, Hayes, Wilson, Gielniak, & Peterson, 2010). Teachers do not have time to spend in ineffective professional development settings that do not provide the knowledge and experience needed to utilize technology for instructional purposes. Ineffective professional development plans may lead to lack of credibility for the educational innovation, in this case, the integration of technology for CCSS implementation. Lack of effective professional development opportunities has been noted in the literature as a primary barrier to technology use (Butler & Sellbom, 2002; Frey & Donehue, 2003). This barrier could potentially lead to increased resistance to change if not addressed. Examining teachers’ peak level of concerns can assist school district staff to plan for professional development opportunities that appropriately and effectively respond to teachers’ differentiated needs in order to integrate technology for CCSS implementation.

**Definitions**

*21st century skills.* Skills deemed necessary for students to possess to be competitive members of the global society. These skills consist of critical thinking and problem solving, creative and innovative thinking, and the ability to work collaboratively and communicate effectively (Partnership for 21st Century Skills, 2009).
21st century tools. Tools deemed necessary for a digital citizen to function professionally and socially in the global society. Tools include computers, interactive whiteboards, wikis, blogs, etc. (Partnership for 21st Century Skills, 2009).

Assumptions. Something that is accepted as true or certain to happen without proof. Assumptions include technology use associated with demographics such as age, gender, socioeconomic level, etc. (Hargittai, E. (2010).

Concerns. Items that are a matter of interest or importance to someone that may be experienced at varying levels of intensity (George, Hall, & Stiegelbauer, 2006).

1. Unrelated Concerns are defined as concerns unrelated to teaching such as concerns about passing a test.
2. Self-concerns are defined as concerns related to teaching but are egocentric and reflect feelings of inadequacy or self-doubt.
3. Task Concerns are defined as concerns related to the job of teaching such as logistics, preparation of materials, etc.
4. Impact Concerns are defined as concerns which center on how teaching affects students.

Concerns-Based Adoption Model (CBAM). The CBAM is a theoretical framework that examines change from the perspective of those immediately involved in the change process (George, Hall, & Stiegelbauer, 2006). The CBAM views change as a process, rather than an event, recognizes that change is personal, and that effective adoption of innovations entail development in both feelings and skill levels.
First Order Technology Barriers. External factors, such as lack of adequate access, time, or training that may contribute to limited or ineffective technology integration (Tsai & Chai, 2012).

Innovation. An idea, practice, or object that is perceived as new to an individual (Rogers, 1995). The object or situation that is the focus of the concern (George, Hall, & Stiegelbauer, 2006).

Personal Characteristics. Demographic factors that are personal in nature; for example, questions about gender, age, income, marital status, or race. Use of personal characteristics allows readers to decide the extent to which results may apply to themselves (Patten, 2012). Demographic factors in this study include age, gender, and years teaching at the elementary level.

1. Age is defined as the actual age of the teacher.
2. Gender is defined as whether the teacher is male or female.
3. Years of teaching at the elementary level is defined as the number of years the teacher as taught at an elementary school.

Peak Stage of Concern. The CBAM stage with the highest score on the SoCQ. Scores range from 0-7. The stage with the highest score is therefore the most intense, or primary concern of the individual (George, Hall, & Stiegelbauer, 2006).

Professional Development. Provides training and support for teachers to integrate skills, tools, and teaching strategies into their instructional practice while identifying what strategies and activities to replace (Partnership for 21st Century Skills, 2008).
Second Order Instructional Technology Barriers. Internal factors, such as attitudes, beliefs, or perceptions that may contribute to limited or ineffective technology integration (Tsai & Chai, 2012).

Stages of Concern (SOC). The varying emotional intensity of feelings towards an innovation (unrelated, self, task, and impact). SOC is one element of the CBAM developed by Hall, George, and Ruthorford (1979).

Stages of Concern Questionnaire (SoCQ). A quantitative research tool used to collect and gather data about the concerns of individuals involved in an innovation.

Strategic educational technology plan. A three-to-five-year plan that outlines the goals for integrating technology use in schools to increase student achievement, identifies measurable goals and formative measures to assess progress towards goal achievement, provides guidelines for a sound infrastructure, allocates funding, and provides a process for plan revision (Sugar & Holloman, 2009).

Delimitations

The study is delimited to elementary and secondary school site teachers employed in one of the 32 school districts located in Fresno County, California (Fresno County Office of Education {FCOE}, 2013). The study will restrict participation to teachers that currently are employed on a full-time basis within their school district and teach either English Language Arts/Literacy or Mathematics as these are the two content areas in which CCSS have been adopted and are in full implementation across California. The study sample will be analyzed to make comparisons about age, gender, and years of teaching experience, but there will be no distinction between grade levels taught.
Since the researcher serves as the school site leader at one elementary school site within a school district located in Fresno County, teachers employed at that school site will be excluded from participation in the study. According to McMillan and Schumacher (2010), sampling bias may occur “when the researcher consciously or unconsciously selects subjects that result in an inaccurate finding” (p. 143). The potential for bias would exist if teachers from the researcher’s school were included in the study as they may express a point of view deemed favorable by the researcher.

**Organization of the Study**

This dissertation is divided into five chapters. Chapter I includes an introduction and background of the problem, problem and purpose statements, research questions and study significance for direction, definitions to provide meaning, study delimitations to clarify scope, and organization for study description.

Chapter II is a literature review that focuses on the paradigm shift faced by educators as technology is integrated into common core standards implementation and how individuals experience varying levels of concerns as they pass through the change process. Only by understanding those concerns can effective professional development and support programs be designed and implemented.

Chapter III is the methodology for the study. This chapter will provide information on research design, population and sample, study instrumentation, study plans for data collection and analysis, and study limitations.

Chapter IV includes the analysis of data and findings of the study. Data analysis and discussion of findings will be guided by the research questions of the study.
Chapter V will provide conclusions, implications and recommendations for further research.
CHAPTER II: REVIEW OF THE LITERATURE

Introduction

The infusion of technological advances into every aspect of our society has produced dramatic changes in the global marketplace (Partnership for 21st Century Skills, 2008). People have access to products, services, and information from around the world leading to an intensely competitive and highly collaborative economy. Highly skilled 21st century graduates are expected to think critically and problem solve, be creative and innovative, work collaboratively, and communicate effectively both verbally and in written form, while utilizing various modes of technology (Partnership for 21st Century Skills, 2007). As a result students need to learn skills that prepare them for their future, not our past.

The literature review is organized into 13 main sections. The review begins by providing context for the paradigm shift that is occurring in education based on the infusion of technology into society and its implications for the skills students need to actively engage and successfully contribute to the world. This technological infusion led to the development of Common Core State Standards and Technological Standards of Literacy that define what students must know to be technologically literate. The role of school districts is to align funding with strategic planning to ensure technology implementation and utilization is accomplished in a manner that provides an effective framework for student learning, teacher preparation through professional development and support, and instructional delivery. This paradigm shift constitutes transformational change in which teachers’ concerns must be considered before the innovation of integrating technology for CCSS implementation can be fully recognized leading to
professional growth and increased self-efficacy. Assumptions exist regarding gender, age, and acquiring knowledge. These assumptions must be considered when planning professional development and support. First and second order barriers to implementation utilizing technology have been identified in the research. Strategies to create support and alleviate resistance to change should be incorporated into professional development to create a catalyst for change based on a moral purpose. An understanding of adult learning theory is important when planning for professional development for the acquisition of new knowledge. Adult learners are unique and their needs must be taken into consideration. The Theory of Diffusion of Innovations provides insight into how teachers react and assimilate unknown innovations such as integrating technology into their teaching practice. Research has shown that high quality professional development plans should incorporate five characteristics. Unfortunately, the majority of professional development plans do not provide the knowledge required for teachers to utilize technology in the classroom. Research conducted on professional development plans discovered a correlation between teachers’ concerns regarding integration of technology and the hours spent in effective professional development programs. Finally, the literature review discusses the research on the CBAM and its selection as the framework for the study. The CBAM was developed as a model for understanding the change process. Individuals sequentially progress through stages of concern (SoC) as they become more skilled with an innovation. The SoCQ is the quantitative tool to be utilized for the study to understand individual concerns. Age, gender, and years of teaching experience are the personal characteristics selected for the study to determine differences of concerns. Strategies for addressing concerns when planning for differentiated
professional development and support for integrating technology for CCSS implementation are discussed according to the research.

**Review of the Literature**

**21st Century**

Cell phones, email, and the internet are pervasive in all aspects of students’ lives, except when they enter the classroom. They may be provided access to a computer once or twice a week and most often told not to use their cell phones. In a study conducted by the Kaiser Family Foundation (Rideout, Foehr, & Roberts, 2010) it was reported that students between the ages of 8 and 18 were spending the majority of their hours out of school using cell phones, computers, televisions, and other digital/media tools. This study included a survey of over 2,000 students that revealed that in grades three to twelve they spent an average of 7 ½ hours using technological devices during non-school hours.

Digital devices including computers, cell phones, iPods, and technological gaming tools have become not only necessary for communication, but have become generational identity symbols (Huntley, 2006). Students must be equally engaged with technology during the school day.

The concept of 21st century skills was developed to address concerns that students are not being prepared for the workplace of tomorrow. There was a commission convened to determine which skills would be needed by students to be competitive in the future (Secretary’s Commission on Achieving the Necessary Skills (SCANS), 1991). Findings suggested that although teachers were working diligently to educate students, they were not addressing the skills needed for the workforce of today or the future. The
current education system was established over 100 years ago and has only minimally changed.

A national survey conducted by Project Tomorrow (2007) on teacher and student computer use both in and outside the classroom provided relative results. Results indicated that teachers are progressing in becoming computer literate, but substantial work is still required before every teacher is effectively using technology to enhance instruction. Forty-three percent of the teachers surveyed were using technology in planning lessons, but failed to utilize technology as an essential component of lesson planning (Project Tomorrow, 2007). Many teachers were only using technology outside the classroom for communication and record keeping tasks. Contrarily, students’ technology use outside the classroom is rapidly increasing.

Students need to be taught metacognitively in which they must be presented with opportunities to think deliberately about their own learning (Partnership for 21st Century Skills, 2009). According to Prensky in Teaching Digital Natives (2010), the emphasis of instruction must be more on how students learn relevant skills as they use technology to get things done and less on the mastery of technology just for learning about the technology itself. Students should be able to take control of their learning through self-direction and self-monitoring. Tapscott (2009) argues that the Internet is the absolute interactive learning environment. Schools and library books are no longer the main source of information for students. The Internet provides access to experts from across the globe along with information that continuously updated. Instruction must move from a transmission, teacher-centered model of education to a learner-centered model where the focus is on the individual activities of the student (Tapscott, 2009). The use of
computer technology provides students with opportunities to make meaning of information, present information to a large community, construct knowledge from a variety of sources, and organize information (Partnership for 21st Century Skills, 2009).

Required for a student to be digitally literate is proficiency in technology, economics, and science, along with content areas (Lemke, 2006). Students should be knowledgeable about scientific principles to be able to participate in economic and civic activities. They should be able to use technological tools to process data and then report results. Students should know how to utilize technology to achieve goals and be able to locate information from a variety of sources. They should understand how to evaluate sources to determine credibility. Due to the global economy and increase in Internet conducted business, students should have a foundational understanding of the similarities and differences inherent during interactions with people from other cultures. They need to have an understanding of how technology is reflected in societal values and norms (ITEA, 2000; NAE & NRC, 2002; Partnership, 2002; SCANS, 2000).

Technological tools are required to teach students 21st century skills. In order to teach these skills in the classroom, teachers must be provided with differentiated professional development. Systemic change is required within the school system.

**Common Core State Standards and Technological Standards of Literacy**

In 1998 the National Education Technology Standards (NETS) was published by the International Society for Technology in Education (ISTE). This report outlined standards and guidelines to address students’ requirements for technological literacy. The six standards are basic operations and concepts, social, ethical, and human issues, technology productivity tools, technology communication tools, technology research
tools, and technology problem solving and decision making tools. These standards include all grade levels and are meant to be integrated into all curricular areas.

The North Central Regional Educational Laboratory (NCREL, 2002) provided six key concepts that should be taught beginning in kindergarten and continuing through eighth grade: (a) basic computer concepts and operation, (b) development of communication tools, (c) use of technology research tools, (d) use of tools for productivity, (e) maintain an understanding of ethical, human, and social issues inherent in technology use, and (f) become skilled using decision-making and problem solving technology tools.

As stated in the No Child Left Behind Act of 2001 in the section entitled Enhancing Education Through Technology (EETT), every student must be literate in the use of computer technology by the end of their eighth grade year in school (No Child Left Behind (NCLB), 2002). The fundamental goal of this act is to “improve student achievement through the use of technology in elementary and secondary schools” (U.S. Department of Education, 2006, Sec. 2402b). According to the NCLB mandate, all teachers must develop technologically literate students. Veteran teachers must receive professional development and new teachers should be provided opportunities to gain knowledge in computer literacy prior to entering the teaching workforce.

A report published by the Secretary’s Commission on Achieving Necessary Skills listed five competencies for K-12 students including one of which stated that students must be able to work with a variety of technologies (U.S. Department of Labor, 2000). “Skill in the use of computers and other technologies” was included as an essential skill for students in the 21st century by the American Association of School Administrators
(Uchida, Cetron, & McKenzie, 1996). Students must become competent in the use of technology. They must master technological skills in the context of learning and problem solving related to academic content and standards. This will require continuous effort and will continue to change over time as new technologies emerge. Teachers that are literate in technology are needed to prepare students that are technologically literate by the end of their eighth grade year in school in order to comply with the technology requirements outlined in NCLB.

The CCSS provide rigorous content expectations with the intent to make all students ready for life in a technological society. Currently, English Language Arts/Literacy and Mathematics standards are in the implementation phase. Next Generation Science and English language Development standards will be functional during the 2014-2015 school year (“Center for K-12,” 2012). Technology is not included as a separate strand of content, but is incorporated as expectations of technological proficiency throughout the content standards. The need to effectively use technological tools is embedded into every aspect of the CCSS.

Standardized assessments are under development to measure students’ performance on the elements of a 21st century education. According to the Partnership for 21st Skills (2009), “to be effective, sustainable, and affordable, sophisticated assessment at all levels must use new information technologies to increase efficiency and timeliness” (p. 5). The Smarter Balanced assessments were piloted in the state of California in spring 2014 to gather baseline data for full implementation during the 2014-2015 school year (California Department of Education). These assessments require students to use a computer device and exhibit competency in several technological skills. The Smarter
Balanced assessments extend beyond traditional multiple choice questions to incorporate response items that utilize technology. Students are required to demonstrate critical thinking and problem solving skills.

**Strategic Planning and Funding**

According to Lemke, Coughlin, & Reifsneider (2009), researchers have found that extracting the full learning return from technology implementation requires much more than the introduction of technology with software and web resources aligned with the course content and materials. It requires the combination of content, sound principles of learning, and high-quality teaching. Poor strategic planning can cost money, lead to lack of credibility for the desired outcomes, and insufficient support for stakeholders, including teachers.

Strategic planning for technology implementation and utilization is a major step used to set priorities and provide a framework for student learning, teacher preparation and delivery of instruction, resource distribution, administration data management and communication, and technical support (Missouri Department of Elementary and Secondary Education, 2013). These technology plans are often written by technology directors that may have limited to no expertise in how adults and students learn new information (Byron & Bingham, 2001) and are developed primarily to meet competitive grant requirements to secure funding to maintain technology rich environments. Therefore the critically important section regarding professional development is not clearly defined and articulated in such a way that addresses the broad range of skills needed to ensure effective technology implementation at the school level (Byron & Bingham, 2001). Research based professional development for technology use should be
an essential component of school technology plans; it should not be just an add-on. To be an effective tool, technology plans must encompass specific action steps to train and support teachers on integrating technology into the learning process.

Significant funding is required by schools to develop and maintain a technological environment to support the needs of a 21st century student. Inadequate funding presents a major challenge for many schools and school districts. According to the K-12 IT Leadership Ship (Consortium for School Networking, 2014), 47% of the district technology official respondents reported their budgets are not adequate to meet equipment needs or future technology demands. The term “scientifically-based research” (SBR) is cited over 100 times in the No Child Left Behind (NCLB) Act of 2001. This legislation mandates that federal funds may only be used by schools to implement instructional programs, assessments, and professional development programs that are identified as highly effective. The Schools and Libraries program, commonly known as “E Rate” provides discounts of up to 90 percent to help eligible schools and libraries in the U.S. purchase telecommunications and internet access (U.S. Department of Education). The Enhancing Education Through Technology - Competitive (EETT-C) grant program provides funding to assist eligible school districts in using technology to enhance teaching and learning. Both of these competitive grants require school districts to develop a technology plan to explain how telecommunications and information technology will be used to achieve educational goals and accomplish curriculum reforms. Technology plans include many costs and they must be targeted address the differentiated needs of all teachers.
According to Levenson (2012) in his book, *Smarter Budgets, Smarter Schools*, educating a student has costs that have steadily increased over the past twenty-five years from approximately $6,800 per student to $12,600. In 2012 alone an estimated $20 billion was projected to be spent by public school districts on technology (Levenson, 2012). In many workplaces and industries, technology has reduced the cost of doing business. However, technology seems to be increasing the cost of educating students. This is mainly due to the fact that school districts are trying to fit technology into an antiquated mold rather than allowing the tools of technology to redesign the current system (Levenson, 2012). Differentiated professional development plans are required to specifically address how technology should be integrated to update the system for educating students for the 21st century.

**Transformational Change**

Anderson and Anderson in *Beyond Change Management* (2010), present a roadmap for conscious transformation. The authors Conscious Change Leader Accountability Model, identifies four quadrants that must be addressed by leaders in order to achieve transformational change within an organization. The quadrants include the internal mindset and culture along with the external behavior and systems (p.15). Continual awareness of these quadrants is important as people dynamics are acting interdependently as they play out in this process. As there is with any chance, resistance is expected. Dealing with resistance, attending to people’s reactions, and providing support are vitally important to the success of the change initiative. The first stages involve presenting the need for change, ensuring a clear vision and commitment for
change, assessing the organizations capacity for change, and then designing of the desired state (Anderson & Anderson, 2010). The current mindset of staff should be considered.

According to Anderson and Anderson (2010) in their book Beyond Change Management, “Resistance is caused when a person’s core needs are triggered, and their ego perceives their needs will not be met” (p.159). Substantial levels of support and encouragement are vital as people internally shift their current views regarding student learning and instruction. Likewise, other theorists also provide a more humanistic approach to organizational change. These approaches similarly address change through connections with people and their reactions throughout different levels of the change process (Fullan, 2008, 2010; Hall & Hord, 2001; & Reigeluth, 2006). Change can be difficult and may involve struggle, anxiety, and feelings of loss for past practices (Fullan, 2005). As stated by Fullan (2005), whether change is imposed on teachers, or if it is voluntary, initial chaos is common. If the change is incorporated systematically with adequate support, the change can lead to professional growth and increased self-efficacy by all participants (Fullan, 2005).

When working towards changing teacher practices and behaviors, administrators must remain aware of teachers’ concerns regarding implementation of the change and how to provide differentiated professional development and support to address those individual concerns. The next steps encompass the planning and organizing for implementation. This is the area where professional development must be effectively designed and differentiated based on teachers’ concerns, adult learning research, and best instructional practices.
Assumptions

Several assumptions exist regarding age, gender, and the acquisition of new knowledge. Assumptions related to age and gender are generally not based on empirical evidence (Hargittai, 2010); however, findings do suggest that being a male and white or Asian American are associated with higher levels of technological skills. According to the National Center for Education Information (Feistritzer, 2011), eighty-four percent of teachers are female. Extensive research has also been completed relative to the age of the user of technology.

The post-millennial "digital native," is a term that was created by Marc Prensky in 2001 to describe the world’s dominant demographic, while the "digital immigrant," refers to people not born during the digital age, but who are adopting aspects of technology (Prensky, 2001). Nearly 80% of teachers today would be categorized as digital immigrants (Feistritzer, 2011). Prensky (2001) claims this generational difference is the “biggest single problem facing education today” (p. 2). Students today are “native speakers” of the digital language of computers, video games and the Internet. They do not know what a world without the internet means. According to Prensky (2001), “today’s students think and process information fundamentally differently from their predecessors” (p. 1). Due to the effects of digital technology, Prensky (2001) posits that the brains of digital natives are physically different from those of previous generations. As stated by Prensky (2001), digital immigrants retain their ‘digital immigrant accent’ even though they may learn to adapt to the digital environment. This creates an educational challenge along with a deficient model of professional development as digital
immigrant instructors must learn how to teach students that often speak a different language.

As an increasing proportion of the global society are now growing up having been exposed to digital technology, a new term, ‘digital wisdom,’ has been proposed by Prensky (2009). Digital immigrants cannot become digital natives, but they can gain digital wisdom through professional development and interactions with technology. This does represent an educational shift in mindset as the view is becoming one in which everyone is assumed to be able to move towards digital enrichment, thus reducing the digital divide (Prensky, 2009).

An additional underlying assumption exists that once people start to explore the online world, inequality in technology savvy disappears (Hargittai, 2010). This assumption contends that young people are proficient with communication and information technologies (ICT’s) just because they have had exposure to digital media since a young age. The implication is that “digital native” use is not a concern given their comfort with and expertise in digital media. Researchers warn this assumption has not been backed up with evidence (Bennett, Maton, & Kervin, 2008). This presents yet another challenge for teachers as they must learn how to also create digital knowledge equality among their students.

Assumptions exist and stereotypes are tied to gender and certain generations that must be considered when planning for professional development to support transformational change.
Barriers to Technology Implementation

Research conducted on barriers to implementation has identified two levels of barriers to account for teachers struggling to integrate technology into the classroom (Ertmer, 1999). The first order barriers include external factors that could potentially inhibit technology integration. External factors include inadequate access, training, time, and differentiated professional development and support from the organization instituting the technology initiative.

The second order barriers include factors that are more intrinsic to the teacher, such as beliefs relative to pedagogy and technology, willingness to change, and perceptions regarding the innovative incorporation of technology for instruction. As purported by Ertmer (1999), even if teachers have adequate competence, software and hardware, technology integration will not necessarily occur although first order barrier issues have been resolved. To attain technology integration, second order barriers must also be resolved.

Teacher beliefs can be deeply rooted and therefore difficult to detect unless a method is devised to bring forth beliefs and a strategic plan is put into place to effect deep change. Differentiated professional development programs may teach the skills and knowledge required for technology integration, but then fails to create the necessary shift in pedagogy and attitudes. An intervention model must be in place that integrates strategies to overcome barriers during implementation of an innovation or at a minimum to create support to combat resistance from detracting from innovation implementation (Ertmer, 1999). Two strategy methods mentioned in the change literature to address barriers are often used in partnership with each other. The first strategy is to identify
common core values and beliefs. This shared belief system provide a platform in which to evaluate barriers against (Baldridge, 2011; Kotter, 2006; Fullan, 2010; Reeves, 2009). The second strategy for overcoming barriers is creating a support system of stakeholders to act as a guiding coalition. This group’s purpose is to present the need for change and communicate the need for urgency needed to provide the catalyst for the change (Duffy, 2004; Kotter, 2006; Reeves, 2009; Reigeluth, 2006). By simultaneously using both of these strategies, the system is moved to a culture of change fueled by a moral purpose rather than an external directive (Reeves, 2009).

**Adult Learning**

Substantial research has been conducted on how adults learn. Knowles (1973) published *The Adult Learner: A Neglected Species*, in which he describes andragogy. In this description, Knowles emphasizes that adults come with a many experiences that are crucial to their learning. Andragogy provides an approach to learning that is problem-based, collaborative, and emphasizes increased equality between the teacher and learner. Adults come with predefined ideas for what they need to learn based on their experiences (Merriam & Brockett, 2007). There are commonalities that exist when examining the research on adult learning. Adults need to be self-directed when learning and they need to see the practicality of what they are learning (Fogarty & Pete, 2009; Knowles, 1973; Trotter, 2006). Teachers’ classroom experience should be respected and utilized. They need opportunities to collaborate with colleagues and learn how to apply their learning to the classroom. Ralph Brockett has stated that “most successful adult learning takes place in a collaborative setting” (2008). Peer learning continues after professional development activities have ended providing an ongoing level of support to participants. The purpose
and value of professional development should be concrete. Adult learners tend to resist learning that does not align with the direction they believe their learning should go. Learning that occurs through personal inquiry is often most effective (Beavers, 2009). “Simply having the experience is not what makes adult learners categorically different from other learners. It is the way that experience changes and influences them to further learn and grow” (Brockett, 2008). Viewing adults as unique learners is required for effectively educating teachers and must be taken into consideration when designing differentiated professional development plans to support integration of technology for CCSS implementation.

**Theory of Diffusion of Innovations**

Frequently teachers will encounter unknown innovations in teaching when learning how to integrate technology into teaching practice (Gurvitch, Lund & Metzler, 2008). The stages of an innovation becoming common practice can be explained by Roger’s theory of diffusion of innovations. In the beginning teachers are made aware of the innovation and learn about its components. An opinion is then formed regarding the value of integrating the innovation. A decision is made to either adopt or reject the innovation. As teachers adopt the innovation and share their experiences with peers, other teachers enter the diffusion process (Rogers, 2003). Multiple factors influence the teachers’ degree of innovation use. These factors include the age of the teacher, level of technical experience, belief in constructivist pedagogy, technology related professional development, and contact with technology integrating peers (Gurvitch, Lund, & Metzler, 2008). Differentiated professional development plans must focus not only on
instructional practices that integrate technology, but also on increasing comfort with use of hardware and software.

**Professional Development**

In examining the history of teacher training in education, the words “professional development” will be met with mixed reactions from teachers. Many have cited that professional development is: Generic and unrelated to specific instructional problems, generally disconnected from the daily practice of teaching, infrequent and implemented as a one-time event, and/or often led by an outside consultant who conducts a workshop, but never returns to the district or school site (DeMonte, 2013). Professional development can be perceived as disconnected from daily teaching when teachers do not see the relevance for the training in their classroom. When this happens teachers view the professional development as lacking substance and then it ultimately fails to have an effect on classroom instruction. According to DeMonte (2013) and supported by research completed by Knowles (1973), high quality professional development plans should contain the following five characteristics:

1. Alignment with district and school goals, state and district standards and assessments, and other professional development activities
2. Focus on core content and modeling of teaching strategies
3. Include opportunities for active learning of new teaching strategies
4. Provide opportunities for collaboration
5. Include follow-up and continuous feedback
6. Provide relevance to daily instruction
One section of the EETT Act mandates school districts to provide teachers with research-based, effective training programs (NCLB, 2002). Technology is revolutionizing the role of the classroom teacher as common core standards are requiring technological literacy from both instructor and student. Given the fact that more than three-fourths of the teaching population was born prior to the age when technology was readily available and connectivity instantly accessible (Feistritzer, 2011), teaching the 21st century students of today presents an epic paradigm shift for many. Teachers must transform traditional learning environments to innovative, technology rich learning environments in order to meet student needs. For teachers that are somewhat knowledgeable when they begin their teaching careers, ongoing training is still a requirement due to the fact that technology knowledge quickly becomes near obsolete as technology is constantly evolving.

The majority of professional development programs have not given teachers the knowledge or experience required to utilize technology in the classroom. Integrating technology for instructional purposes in the classroom requires not only the knowing of computer technologies and software, but also the way learning is approached (Morehead & LeBeau, 2005). Differentiated professional development on utilizing technology must be a continuous process that is designed to address varying abilities of teachers.

For the purpose of this study, differentiated professional development related to technology is defined as any training experience that enhances skills in how computer technologies can be utilized for instruction. Lack of effective professional development opportunities is emphasized in literature as a primary barrier to the adoption of instructional technology use (Butler & Sellbom, 2002; Frey & Donehue, 2003). Although school districts are investing large amounts of money in technology, it will not be
effective unless teachers receive sufficient training to effectively utilize the technology for instruction (Dusick & Yildirim, 2000).

As noted in The Edutech Report (2005), technology use in classrooms “depends heavily on the ability of faculty to develop skills, tools, programs, and information” (p. 2). Training is a critical component for successful technology use. Teachers must be trained to understand when, how, and where to use the tools provided by technology (The Edutech Report, 2005). As reported by Bradburn (2007), in order for teachers to gain 90% implementation of theory to practice, they must see a demonstration, be provided opportunities to practice, and receive additional instruction if needed. Vannatta and Fordham (2004) posit that training for technology implementation should incorporate multiple examples, time to reflect, and ideas for how to include technology into lessons. Training should be offered at regular intervals; not just twice during the school year.

Several studies have shown significant, positive correlations between positive attitudes towards instructional use of technology and the number of hours spent in professional development training (Dusick, 1998). In a study conducted by Dusick and Yildirim (2000), a survey distributed to 550 teachers at a California community college (response rate of 21%, n=117) showed that a predictor of a teacher’s use of technology for instruction was previous technology training. A study completed by Adams (2002) examined the degree to which attendance at technology professional development sessions aligned to the use of technology, including level of technology integration, user concerns about the innovation, and perceived barriers to the integration of technology for instructional purposes (response rate of 39%, n=231). Adams (2002) utilized a variation of the SoCQ and found a positive correlation between attendance at technology
professional development sessions and an increase in the use of technology for instructional purposes. In a study by Casey and Rakes (2014), which included K-12 teacher’s (n=659) that are currently utilizing technology in their classrooms, it was concluded that the amount of technology training was the highest indicator of teacher’s impact and refocusing SOC scores. Additionally, Atkins and Vasu (2000) discovered a significant correlation between the teachers’ peak level of concern and the number of hours spent in technology related professional development.

**Concerns Based Adoption Model (CBAM)**

In light of the fact that many useful and possibly relevant change models exist, the Concerns Based Adoption Model (CBAM) (Hall, George, & Rutherford, 1979; Hall & Hord, 1987, 2001, 2006), an individual-based change model that has been used multiple times to study educational innovation adoptions, was selected as the conceptual model for the dissemination of the innovation guiding the present study for examining the integration of technology for CCSS implementation. Hall, George, and Rutherford (1979) and Hall and Hord (1987, 2001) created the CBAM based on work done by Frances Fuller (1969). Frances Fuller proposed the idea to call ones’ feelings and perceptions “concerns” (as cited in Hall & Hord, 2001). As discovered by Fuller, Brown, and Peck (1967), sets of concerns changed in predictable patterns as teaching capacity was built to effectively manage the innovations. In further research conducted by Fuller (1969), a developmental conceptualization of teachers’ concerns was established. Fuller (1969) found that concerns aligned with career stages of teachers; pre-teaching non-concern, early teaching concern with self, and late teaching concern with pupils. Fuller (1969) developed a model for teacher education based on understanding a teachers’ unrelated
(focused on something unrelated to teaching), self (focused on questions related to personal thoughts and ideas), task (focused on management aspects), and impact (focused on the effects of the innovation on students) concerns.

From this earlier work of Fuller (1969), Hall, George, and Rutherford (1979) continued to study the concerns proposed by Fuller. Assertions were made that suggested there was more to change than just mandating and implementing an innovation. Change involved an actual process (Hall & Hord, 1987). Field-based research was utilized to document stages and levels of change participants were experiencing. By analyzing this documentation, three frameworks for describing teachers’ engagement with and attitudes toward an innovation emerged: (a) Stages of Concern, (b) Levels of Use, and (c) Innovations Configurations. They identified stages of concern (SOC) as a basic dimension of an individual-based adoption model.

According to Hall & Hord (2001), underlying all areas of the CBAM model are the following twelve assertions and assumptions about change:

1. *Change is a process and not a one-time event.* Change is a process through which individuals move as they understand a new way of doing things.

2. *Major differences are inherent in innovation development and implementation.* Development is about actions in innovation creation, whereas implementation includes steps for use.

3. *Until individuals change within it, an organization will not change.*

   Individuals should be provided help and support with the change.

4. *Innovations vary.* An innovation can be a process or product; multiple or single.
5. *There are interventions which are key to change process success.* Individuals should focus not only on the intervention and its use, but also on the actions that influence the process.

6. *A horizontal perspective for change works best.* All people within the organization need to recognize themselves as part of the change process and understand the role of others within the process.

7. *Administrative leadership is essential to prolonged success.* Leadership must provide ongoing support if the change is to succeed.

8. *Mandates can be effective.* Mandates that set clear priorities, maintain open communication, coaching, support, and time for implementation, they can be successful.

9. *The school itself is the primary source of change.* The key unit for making a change is at the school level.

10. *Change is a team effort.* All members of the school site play a role in the change process.

11. *Effective interventions are important.* Change can be stressful. Concerns and frustration must be addressed to reduce the challenges.

12. *School context influences the change process.* Physical features (size, resources, and policies) and human factors (attitudes, perceptions) of the context influence the process of change.

CBAM considers the fact people experiencing change pass through an evolutionary process in which the types of questions they ask, the concerns they have, and the impact of the change shifts over time (Hord, Rutherford, Huling-Austin, & Hall,
An assumption of the CBAM posits that a critical factor in the change process is an organization cannot change until the individuals within the organization change (Hall & Hord, 1987, 2001). The CBAM can be used as a diagnostic evaluation to study how the attitudes of teachers affect their integration of technology for CCSS implementation. The CBAM addresses three assumptions: the individual’s concerns about the change, the degree in which the change is implemented, and the adaptation of the change to the individual (Dirksen & Tharp, 1997).

The CBAM model includes tools for measuring and then describing parts of the change process. The Stages of Concern Questionnaire (SoCQ) is a quantitative tool. The SoCQ includes 35 items to be answered with a Likert scale instrument. The questionnaire was developed to apply to all educational innovations and is used to help understand the feelings and perceptions of individuals undergoing the innovation while in the change process (Hall & Hord, 2001). The tool can provide significant assistance in the planning of interventions that consider the personal side of change. Teachers must be open to the change and willing to identify their own concerns. How teachers feel about the innovation and perceive the outcomes of the change will be a significant determinant of whether or not successful change actually occurs in the classroom (Hall & Hord, 1987). Administrators and school district planning staff that are aware of teachers’ concerns regarding an innovation can proactively address these concerns to ensure implementation of the innovation with fidelity.

The SOC area of the CBAM model was used as the study’s context for determining the concerns of teachers. The SOC proposes that individuals facing change evolve in the questions they ask as well as their concerns. Initially, teachers ask questions
that are self-oriented, such as “How will it affect me?” (Hall & Hord, 2001). Once the intrinsic issues are resolved, the questions asked become task-oriented; such as, “How do I do this?” Once task-oriented issues are addressed, teachers can focus on the impact of the change with questions such as, “Is this innovation showing signs of effectiveness?” and “Is there a way to make this innovation work better?” (Hall & Hord, 2001). The SOC includes four stages of concern; unrelated, self, task, and impact concerns. It is suggested that an individual may have concerns in these areas at the same time and that one of the areas will be most important, becoming the peak stage of concern for the individual.

It is possible for an individual to identify concerns at multiple SOC at the same time. An individual may have personal concerns about the daily effects of the innovation, and impact concerns about how the innovation will affect their work with their students. However, the intensity of the individual’s concerns will vary depending on factors, such as degree of experience with the innovation and participation in innovation related differentiated professional development activities (Adams, 2002; Casey, Harris, & Rakes, 2004; Hall & Hord, 2001; Todd, 1993). Concerns must be resolved at each stage before intensifying at another stage. Ideally, the intensity would move from personal to impact, but there is a possibility that personal concerns may re-emerge during the innovation, therefore causing backward movement.

**Reasons for Using the CBAM as a Model for Change**

Change models, including the CBAM, are not completely free of bias since all change models promote change within a specific context and focus on systems’ change without questioning the value of the change itself (Hall, George, Ruthorford, 1979). The
SOC aspect of the CBAM addresses the fact that change occurs at the individual level and so the individuals themselves determine whether or not the change will occur.

The CBAM framework posits the understanding that individuals involved in the innovation of something that is being implemented view the change process as a personal process, not an event, and involves incremental growth in feelings and attitudes. The SOC dimension of the CBAM provides a language for the feelings people are having when experiencing a new practice or technology (Hall, George, Ruthorford, 1979). In an educational context, when planning the diffusion of an innovation, appropriate differentiated professional development activities and support structures cannot be developed without a thorough understanding of the concerns’ of the involved individuals (Dooley, 1999).

Numerous studies have utilized the CBAM and in particular the SoCQ to help researchers understand the change process and how to support individuals along way. The Preparing Tomorrow’s Teachers to Use Technology Initiative from the U.S. Department of Education InTime Project (Integrating New Technologies Into the Methods of Education, Krueger, Boboc, Smaldino, Cornish, and Callahan, 2004) used the SoCQ to study the effectiveness of materials developed by the project to apply technology into lessons. James and Lamb (2000) collected SoCQ data to assess the progress of site based teams in integrating technology and specific content across certain content areas. In another study conducted by Hargreaves, Moyles, Merry, Paterson, Pell, and Esarte-Sarries (2002), concerns data was used to evaluate the progress of teachers involved in an interactive teaching project.
Selected Personal Characteristics of Teachers

A review of the literature does show that personal characteristics of individuals may be related to their concerns (SOC) profile. Teacher concerns (unrelated, self, task and impact) regarding the integration of technology for common core implementation is the dependent variable in the study, with the independent variable including certain personal and contextual characteristics (age, gender, and years of teaching experience) that may impact the concerns of teachers. In studying the concerns of individuals in the innovative change process, Hall, George, and Ruthorford (1979) suggested that demographic variables have no significant relevance with concerns; however, when studying technology-related innovations, other researchers have found that demographic variables do correlate with concerns (Adams, 2002). Additionally, literature discussing technology adoption often mentions correlations between age, gender, and experience. Therefore, it seems likely that in adopting technology related innovations, demographic variables may predict user concerns (Kagima & Hausafus, 2000; Mitra, Steffenmeier, Lenzmeier, & Massoni, 1999).

Age

As the authors of the CBAM model, Hall, George, and Ruthorford (1979) do not see age as predictive of a user’s concern during innovation adoption relative to technology use, although age has occasionally been found to correlate with technology use and attitudes towards technology. Research does suggest a possible relationship between the age of a teacher and their use and confidence in utilizing technology, but this does not always hold true.
In a study conducted by Kagmina and Hausafus (2000) regarding teacher’s computer self-efficacy (response rate of 58%, n=176), they found that teachers 60 years of age or older were less confident in using technology for instruction. In contrast other studies have failed to reveal a correlation between age and the use of technology. In a Learning in a Technology Rich Environment (LITRE) survey conducted at North Carolina State University (NCSU) in 2008 (response rate of 55%, n=1790), which was developed to survey faculty about their experiences with instructional technology found no relationship between the amount of time the faculty member spent using technology for instruction or the number of technology items and their age. The NCSU study does not support the assumption that younger teachers are more likely to use technology for instruction than older teachers (North Carolina State University, 2004). In addition to the NCSU study, the technology concerns of middle school teachers was researched by Atkins and Vasu (2000) and no relationship was found between stage of concern and age.

**Gender**

Gender was not found to be a significantly predictive variable by Hall, George, and Rutherford (1979). However, when investigating technology infused innovations, several researchers that have used the SOC have found that gender does correlate with an individual’s level of concern (Adams, 2002). In a previously mentioned study conducted by Adams (2002), the extent to which attendance at technology based professional development sessions was investigated (response rate of 39%; n=231). Adams concluded that younger female teachers had high levels of integration of technology into their instruction. Research conducted by Kagmina and Hausafus (2000) to examine teacher’s
technology self-efficacy (response rate of 58%, n=176), found that female teachers had significantly lower self-efficacy scores than male teachers.

**Years of Teaching Experience**

As has been noted with variables of age and gender, the assumption that years of teaching experience affects the integration of technology for instruction has had mixed results. In the previously mentioned study conducted by Kagmina and Hausafus (2000), they concluded that teachers with more than 10 years of teaching experience were less confident in using technology for instructional purposes. This would imply that older teachers have lower rates of self-efficacy related to technology use. In contrast the LITRE survey conducted at NCSU failed to find a relationship between a teachers’ years of teaching experience and the frequency of technology use or number of technology items used. The LITRE survey did not support the assumption that teachers with more years of teaching experience are not as likely to use technology for instruction as the younger generation (North Carolina State University, 2004).

**Concerns-based Technology Related Professional Development Interventions**

According to the CBAM model, certain interventions may be effective to address particular types of concerns once those concerns have been identified. By utilizing the SOC model and the SoCQ questionnaire, administrators are able to identify the stage (unrelated, self, task, and impact) that is most intense for the teacher. In literature related to the SOC (Hall, George & Ruthorford, 1979; Hall & Hord, 1987, 2001), the authors share suggestions for professional development interventions for individuals with varying concerns. Once administrators and professional development designers understand teachers’ primary concerns, effective and appropriate interventions can be implemented.
**Strategies for Addressing Self-Concerns**

Individuals with a high score in category one (self-informational) indicate intense concerns about what the innovation is and what is involved in implementing the innovation (Hall, George, & Rutherford, 1979). People with these self-based concerns cannot cope with a deluge of information about the innovation. Instead they need a small amount of information about what the innovation is, its purpose, and what is involved in its use. Providing general information in small amounts will peak interest, but not overwhelm the individual. The amount of information offered should be increased gradually over time (Hall & Hord, 1987).

For teachers with high self-informational concerns, informational interventions can be provided in a variety of ways. Face to face conversations, quick updates in staff meetings, and newsletters may be effective (Hall & Hord, 1987). During the innovation planning process, providing an overview of the innovation may be effective if allaying some concerns from the beginning. (Bradshaw, 2002). Ideas for providing a general overview may include, website information, staff bulletins, showcasing uses for the technology that are practical and seem simple to emulate, bringing in guest speakers to discuss and provide examples of the innovation. Teachers unrelated awareness concerns would also potentially benefit from being provided with general information about the innovation since they may only need information to acquaint them with the innovation (Bradshaw, 2002).

Individuals with a high score in category two (self-personal) are highly concerned about status or rewards associated with the innovation or its’ effects on their current practice (Hall, George, & Rutherford, 1979). The intensity of personal concerns for these
teachers may create a situation where they are oblivious to the impact concerns associated with the innovation, such as the effects the innovation may have on their students. With a high self-personal level of concern, teachers are worried about their ability to function with the innovation and administration expectations (Hall & Hord, 1987).

Often individuals that are nonusers of an innovation have high self-personal concerns. These individuals need personalized, one-to-one personal support and attention as they begin to use the technology associated with the innovation (Dusick & Yildirim, 2000; Hall & Hord, 1987). Administrators and professional development planners should acknowledge that it is acceptable for teachers’ to feel uncomfortable at the onset of an innovation (Hall & Hord, 2001). Teachers with high self-personal concerns may need a supportive peer or coach whom they can call or email (Gandolfo, 1998; Hall & Hord, 2001). Encouragement can also be offered through in-person interactions with technology staff, fellow teachers’, and administration (Covington, Petherbridge, & Warren, 2005; Gandalfo, 1998; Hall & Hord, 1987, 2001). Effectively planned training programs that address affective concerns may be useful for teachers’ with high self-personal concerns related to technology (Covington, et.al. 2005; Rogers, 2000). Additionally, teachers’ with high self-personal concerns may benefit from connecting with teachers that have already passed through that stage (Holloway, 2003).

Strategies for Addressing Task-Concerns

Individuals with a high score in category three have concerns that are task-management. Although still intrinsically focused on the innovation, this individual’s concerns are centered on the actual tasks and processes applicable to using the innovation
(Hall & Hord, 2001). Teachers in this stage have intense concerns about logistical types of details such as time and management. These teachers will benefit most from interventions that show how to do things and then provide support during their use of the innovation (Bradshaw, 2002; Hall & Hord, 2001).

For teachers that are most concerned about the task-management element of the innovation, they will need interventions that specifically address their logistical fears. Tutorials, explanatory web pages, instructional videos, and workshops may be helpful. Opportunities should be provided that allow the individual to use the innovation. Workshops should be self-selective based on specific concern topics and self-paced (Rogers, 2000). Offering beginning, intermediate, and advanced workshops, teachers can self-select the depth of information needed to address their topic of concern. Using the technology to teach the technology in online workshops may prove helpful in addressing task concerns because the use of the technology is modeled for the teacher (Covington, et.al. (2005). Furthermore, providing opportunities for teachers to visit other classrooms or schools where the innovation is being effectively implemented can alleviate task-management concerns.

**Strategies for Addressing Impact-Concerns**

Self-personal, self-informational, and task-management concerns are intrinsically connected to the individual. These concerns occur as the individual is learning about what the innovation entails, gauging the impact of the innovation on their current practices, and then developing strategies for managing the innovation. When these individual, intrinsic concerns are under control, the focus moves toward concerns that are more extrinsic in nature, such as how the innovation impacts students (impact-consequence),
how the innovation may alter work with other teachers (impact-collaboration) and how the innovation may be used in a variety of ways or improved upon (impact-refocusing) (Hall & Hord, 2001).

Individuals with a high score in category four will benefit from having opportunities to collaborate with each other about their current teaching practices, and the impact of that teaching on students (Hall & Hord, 2001). As noted by King (2001), when teachers use new technology, they are enveloped in a transformative learning experience that alters their perspective and frame of reference changing their practice from a teacher-centered to a student-centered role.

Teachers with intense impact-consequence concerns need support in assessing if and how the innovation has impacted the learning of their students. They may also need support in thinking about assessment measures, such as student performance, test scores, work samples, and portfolio collections to judge the technological impact of implementation of the innovation (Bradshaw, 2002). Professional development sessions focused on student learning, collaborative opportunities to discuss research with teaching peers, small group workshops to offer suggestions on assessing the impact of technology on student learning, professional development sessions that provide ideas on integrating technology for learning, and visits to classrooms or other school sites that are already effectively implementing the innovation may be helpful for teachers with these types of concerns (Bradshaw, 2002; Holloway, 2003; Rogers, 2000).

Teachers with high scores in category five (impact-collaboration) concerns are focused on coordinating and collaborating with others (Hall & Hord, 2001). When learning about new technology and making the decision whether or not to incorporate it
into current practices, providing opportunities for teachers to share what they are learning and then work collaboratively to improve their teaching craft is an important element of support (Covington, et.al., 2005; Gandolfo, 1998; King, 2001). As previously mentioned, collaboration amongst teachers is useful in addressing personal concerns; however, once personal concerns are appeased, teachers may then focus on finding creative ways to collaborate when integrating technology into lessons (Bradshaw, 2002).

Teachers with high scores in category six (impact-refocusing) are ready and willing to explore new benefits available with use of the innovation (Hall & Hord, 2001). Offering professional development opportunities that offer suggestions for increasing an innovation’s effectiveness may be useful for teachers with high impact-refocusing concerns (Hall & Hord, 2002). As noted by King (2001), providing opportunities for teachers to attend professional development sessions that show how technology is used effectively for instruction or how companion technologies can be used, may support their thinking on how to define the current innovation.

Summary

Technology is having a profound impact on society. It plays an important role in every aspect of life today, including education. Technology has deeply impacted the school system and is creating an impetus leading to a paradigm shift in the current educational framework. However, in many classrooms technology integration creates a significant challenge for teachers. This is creating a digital disconnect that could potentially handicap students as they graduate from high school and college and then compete for jobs in the global economy.
According to the No Child Left Behind Act of 2001, students must be digitally literate by the end of eighth grade (No Child Left Behind (NCLB), 2002). Students must be taught how to utilize technology to learn traditional content areas, such as language arts and math, but also how to accumulate, process, and synthesize large amounts of information to problem solve and produce results based on the data and information gathered. CCSS requires students to utilize technology as standards’ mastery occurs and students must then demonstrate their knowledge by successfully completing new Smarter Balanced assessments, which require technology use. This may be met with resistance and inexperience as 80% of the current teaching force is composed of digital immigrants; many of which are lacking digital wisdom.

School districts require large amounts of funding to provide and maintain the technological tools required to provide a 21st century education to students. Strategic plans are written with many components; one of which is a professional development plan for teachers. Assumptions regarding age, gender, and years of teaching should be taken into consideration during planning. These professional development plans must be effectively designed by differentiating training based on teachers’ concerns, research on adult learning theory, and best instructional practices utilizing technology for CCSS implementation.
CHAPTER III: METHODOLOGY

Overview

This chapter describes the methods and procedures used to conduct this study. Included are the study purpose, research questions, research design, population, sample, instrumentation, data collection and analysis, study limitations, and summary.

This quantitative research study was undertaken to identify whether or not significant differences exist regarding teachers’ concerns about integrating technology for CCSS implementation. This information may serve as a valuable tool as school districts across the state of California are strategically planning how to provide differentiated professional development and support to teachers as they instruct students to prepare them for functioning and competing in our 21st century global society.

The study utilized four dependent variables, including unrelated, self, task, and impact. Each of these clusters included a subset of items from the overall SoCQ questionnaire. The raw scores from these items were used for the dependent variables. The SoCQ can be adapted and applied to the innovation that is being studied, in this case, the integration of technology for CCSS implementation (Hall, George, & Ruthorford, 1979; Hall & Hord, 1987, 2001). The SoCQ was initially developed as appropriate to use for all educational innovations; therefore, questionnaire items are applicable for this study.

The independent variables in the study were demographic questions which included age, gender, and years of teaching experience. These were framed in the study as personal characteristics. Personal characteristics included the following:
*Age* (defined as the age of the teacher). Age is a continuous variable that was transformed into a categorical variable. Three break points placed teachers into categories; Millenial (aged 20-32), Generation X (aged 33-49), and Baby Boomer (aged 50 and up) (Burmeister, 2008; Elliot, 2009; Lancaster & Stillman, 2002).

*Gender* (defined as the teacher being male or female). This independent variable was used to determine the possibility of predictive value in the analysis.

*Years of teaching experience* (defined as the number of years the teacher has taught in a K-12 school setting). Years of teaching is a continuous variable that was transformed into a categorical variable. Three break points were identified to place teachers into categories; 0-5 years, 6-10 years, and 11+ years. It is hypothesized that teachers who are relatively new to the profession and have been teaching less than five years are still willing to try new instructional strategies. Teachers that have been teaching six to 10 years are not yet as set in their use of instructional strategies and daily practices. Teachers that have been teaching longer than 10 years are generally less adaptable to change.

**Purpose Statement**

The purpose of this study was to examine the differences in teachers’ Stages of Concern with integrating technology for implementation of CCSS according to age, gender, and years of teaching. In addition it was the purpose of this study to use information obtained from the examination of differences to inform differentiated professional development plans to address the current paradigm shift in education as technology must be integrated for CCSS implementation.
Research Questions

The study sought to answer the following research questions:

1. Is there a significant difference in teachers’ *unrelated* Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?

2. Is there a significant difference in teachers’ *self* Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?

3. Is there a significant difference in teachers’ *task* Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?

4. Is there a significant difference in teachers’ *impact* Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?

5. What professional development opportunities and support structures are appropriate based on the Stage of Concern profile for each personal characteristic (age, gender, and years of teaching)?

Research Design

This quantitative study proposed an examination of whether or not significant differences exist based on selected personal (age, gender, years of teaching) characteristics and teacher’s levels of concerns regarding the innovation of integration of technology for CCSS implementation. Only by understanding how the differences in selected personal (age, gender, years of teaching) characteristics influence teachers’
concerns can be addressed in regards to the extent of implementation. School districts can then guide teachers successfully through the transformational change by planning differentiated professional development opportunities to support integration of technology for CCSS implementation (George, Hall, & Stiegelbauer, 2006).

This study was a descriptive research study as described by McMillan and Schumacher (2010) in Research in Education. The descriptive design is an appropriate type of design for this study as its purpose is "to provide a summary of an existing phenomenon by using numbers to characterize individuals or groups" (p.22). Descriptive studies, in which the researcher interacts with the participant, may involve surveys or interviews to collect the necessary information. The study was non-experimental due to the nature of the independent variables which were assigned and cannot be manipulated. (McMillan & Schumacher, 2010). The independent variables included age, gender, and years of teaching experience. The intention of the quantitative study was to collect information from a predetermined population at a single point in time to understand the nature of the independent variables’ effects on the dependent variable (Johnson, 2001).

This quantitative study utilized a survey to identify the differences between independent variables and gather the information required to derive descriptive statistics related to teachers’ concerns. McMillan and Schmacher (2010) describe survey research as “the use of a questionnaire or interview to assess the current opinions, beliefs, and attitudes of members of a known population” (p. 491). The survey was cross-sectional since it collected data at a single point in time using a self-reporting instrument. According to Creswell (2003), cross-sectional survey designs are well-suited for collecting simultaneous data on multiple variables and are the preferred design to gather
information on the attitudes of individuals. Cross-sectional survey design was appropriate for this study since there were three independent variables. Data was collected during one online survey completion session regarding participants’ behaviors and beliefs.

**Population**

California employed 285,366 teachers in 330 school districts in 2013 (California Department of Education, 2014). According to McMillan and Schumacher (2010), a population is a group of individuals that fit specific criteria to which the researcher intends to generalize results. Studying every member of the teaching population of California through a census would not have been as effective as studying a sample (Patten, 2012). For this reason a sample was drawn and then inferences made to generalize to the teaching population of California.

Within Fresno County, 336 schools are operating including elementary, middle/junior high, high, alternative, continuation, special education, community day, and juvenile court (Fresno County Office of Education {FCOE}, 2013). In 2012 Fresno County employed 9,127 certificated teachers (Ed Data, 2013). Initially, recommendations for potential participating districts was sought from high profile individuals from FCOE; therefore limiting the size of the study sample. According to McMillan and Schumacher (2010), as the size of the population increases, the number of participants needed to maintain estimation decreases. The margin of error in a sampling population is directly correlated to the size of the sample; a larger sample has a smaller margin of error. (McMillan & Schumacher, 2010). Ultimately, it was decided by the researcher to include all Fresno County school districts in the study since all are in the midst of integrating
technology for CCSS implementation. All 32 school districts were contacted on September 7, 2014, regarding study participation (Appendix A).

Table 1.

Fresno County School Districts 2013-2014

<table>
<thead>
<tr>
<th>School Districts</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Alvina Elementary</td>
<td></td>
</tr>
<tr>
<td>Big Creek Elementary</td>
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<tr>
<td>Burrel Union Elementary</td>
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<tr>
<td>Caruthers Unified</td>
<td></td>
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<tr>
<td>Central Unified</td>
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<tr>
<td>Clay Elementary</td>
<td></td>
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<tr>
<td>Clovis Unified</td>
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<tr>
<td>Coalinga-Huron Unified</td>
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<tr>
<td>Firebaugh-Las Deltas Unified</td>
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<tr>
<td>Golden Plains Unified</td>
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<tr>
<td>Kings Canyon Unified</td>
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<tr>
<td>Fowler Unified</td>
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<tr>
<td>Fresno Unified</td>
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<tr>
<td>Kerman Unified</td>
<td></td>
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<tr>
<td>Kingsburg Elementary Charter School District</td>
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<tr>
<td>Kingsburg Joint Union High</td>
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<tr>
<td>Mendota Unified</td>
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<tr>
<td>Orange Center Elementary</td>
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<tr>
<td>Parlier Unified</td>
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<tr>
<td>Raisin City Elementary</td>
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<tr>
<td>Laton Unified</td>
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<tr>
<td>Monroe Elementary</td>
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<tr>
<td>Pacific Union Elementary</td>
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<tr>
<td>Pine Ridge Elementary</td>
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<td>Riverdale Unified</td>
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<td>Sanger Unified</td>
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<td>Selma Unified</td>
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<td>Sierra Unified</td>
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<td>Washington Colony Elementary</td>
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<tr>
<td>Washington Unified</td>
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<tr>
<td>West Park Elementary</td>
<td></td>
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<tr>
<td>Westside Elementary</td>
<td></td>
</tr>
<tr>
<td>Total School Districts</td>
<td>32</td>
</tr>
</tbody>
</table>

**Sample**

The study sample was selected from the larger population of all teachers in California. Certificated teachers employed within the 32 school districts located in Fresno County are representative of the teaching population in the state of California. The average years of teaching experience for California teachers is 14 years. The average years of teaching experience for Fresno County teachers is 15 years.

Table 2.

California and Fresno County Demographic Data 2012-2013

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>Years of Teaching Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresno County</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>California</td>
<td>Under 46 – 53%</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Over 46 – 47%</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Fresno County Office of Education (2013)*

Due to practical constraints and accessibility, a convenience sample was utilized for the study to simplify the conducting of research (McMillan & Schumacher, 2010). A convenience sample was incorporated in that every emailed participant was encouraged to complete the SoCQ questionnaire. Although unable to employ random selection, through description of the Fresno County convenience sample and its relation to the population of California, the researcher provided inferences for generalization. Convenience samples do hold a higher likelihood of error due to bias on the part of the researcher (McMillan & Schumacher, 2010). To avoid study bias, teachers employed at the school site in which the researcher serves as an administrator were restricted from participating in the study.
English Language Arts/Literacy and Mathematics CCSS are in full implementation across the state. Next Generation Science and English Language Development standards will be functional during the 2014-2015 school year ("Center for K-12,” 2012). Since all certificated Fresno County teachers have spent one full year implementing English Language Arts/Literacy and Mathematics standards, only full-time certificated teachers teaching in one or more of those content areas participated in the study. The demographic page of the survey instrument asked a question regarding current content area assigned for the 2014-2015 school year. Participants that did not fit the identifying criteria were thanked and not required to complete the remaining questions of the survey.

Instrumentation

The survey instrument utilized for data collection in this study was the Stages of Concern Questionnaire (SoCQ) (Appendix B) from the Concerns-Based Adoption Model (CBAM) of change (George, Hall, & Stiegelbauer, 2006). The SoCQ is a measure used for understanding the change in perceptions of those involved in the adoption of an innovation. Seven Stages of Concern (SoC) were identified by researchers as stages in which people progress as they are adopting and implementing an innovation (Hall & Hord, 2006).

The SoCQ contains 35 items in which the participants responded and which were used to measure the dependent variables, including unrelated, self, task, and impact. The seven stages of concern are represented by five questions each. These questions were randomly placed throughout the questionnaire. Respondents marked each item on a 0-7 point Likert scale based on how true the item seemed to them in their present state of
mind. The questionnaire asked respondents to share their attitudes, feelings, and concerns about an innovation on the 8-point Likert scale. Concerns were measured using the 8-point Likert scale, where 0 represented “irrelevance” and 7 represented “high relevance,” The low end of the scale contained the 0 and was used for marking items that seemed irrelevant to the respondent. The high end of the scale was represented by 7 and was marked for items that seemed very true for the respondent at the current point in time. It was recommended by the instruments’ authors to avoid alteration of wording of the items or changing their order in the questionnaire. According to George, Hall, and Stiegelbauer (2006) changes to items jeopardizes the reliability and validity of the study.

**Reliability**

Components of reliability include stability (same results are achieved when the measure is applied to the same phenomenon more than once), internal consistency (items within the measure relate to the same phenomenon, and equivalence (same results are achieved when the measure is applied by a different researcher to the same phenomenon) (O’Sullivan, Rassel, & Berner (2003).

Initial reliability of the SoCQ measure was provided through evidence from a sample of 830 teachers (Hall, George, & Ruthorford, 1979). The alpha coefficients of internal consistency for the seven Stages of Concern scales are reflective of the degree of reliability among items in terms of overlapping variance. The Cronbach Alpha (Cronbach, 1951) was utilized to compute data. This test of reliability estimates whether each stage is internally consistent and measuring what the study purports it is measuring (Patten, 2012). The internal consistency coefficients for the seven categories ranged from 0.64-0.71 (Hall, et.al., 1977). The SoCQ has since been used in several different studies.
Four major studies occurred in the 1980’s in which the SoCQ was adapted to measure nonteaching application concerns regarding an innovation (Hall, Newlove, George, Rutherford, & Hord, 1991).

1. Kolb (1993) utilized the SoCQ to assess the concerns of nurses regarding a career in nursing.
4. Martin (1989) utilized the SoCQ to assess concerns regarding the learning of computer programming.

Figure 2. Coefficients of Internal Reliability for Each Stage of the Concerns Questionnaire

<table>
<thead>
<tr>
<th>Authors</th>
<th>Sample Size</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hall, George, &amp; Rutherford, 1979</td>
<td>830</td>
<td>.64</td>
<td>.78</td>
<td>.83</td>
<td>.75</td>
<td>.76</td>
<td>.82</td>
<td>.71</td>
</tr>
<tr>
<td>Kolb, 1983</td>
<td>718</td>
<td>.75</td>
<td>.87</td>
<td>.72</td>
<td>.84</td>
<td>.79</td>
<td>.81</td>
<td>.82</td>
</tr>
<tr>
<td>Barucky, 1984</td>
<td>614</td>
<td>.60</td>
<td>.74</td>
<td>.81</td>
<td>.79</td>
<td>.81</td>
<td>.79</td>
<td>.72</td>
</tr>
<tr>
<td>Jordan-Marsh, 1985</td>
<td>214</td>
<td>.50</td>
<td>.78</td>
<td>.77</td>
<td>.82</td>
<td>.77</td>
<td>.81</td>
<td>.65</td>
</tr>
<tr>
<td>Martin, 1989</td>
<td>388</td>
<td>.78</td>
<td>.78</td>
<td>.73</td>
<td>.65</td>
<td>.71</td>
<td>.83</td>
<td>.76</td>
</tr>
<tr>
<td>Hall, Newlove, Rutherford, &amp; Hord, 1991</td>
<td>750</td>
<td>.63</td>
<td>.86</td>
<td>.65</td>
<td>.73</td>
<td>.74</td>
<td>.79</td>
<td>.81</td>
</tr>
</tbody>
</table>
Validity

A measure is valid to the degree in which it measures what it is intended to measure (Patten, 2012). A series of SoCQ validity tests were conducted in 1974 by researchers and provided evidence that the scores on the SoCQ related to each other. A correlation matrix was designed based on a pilot study (Hall, et.al., 1979). According to Hall, George, and Ruthorford (1979), a study providing the most convincing evidence of SoCQ validity occurred during a two-year longitudinal study of teachers in a school where they were moving from not teaching as a team to routinely teaching as a team. Teachers’ concerns during this time moved as hypothesized by the SOC from being high on the lower SOC area (0,1,2) to higher on the management (4) and impact (5) areas (Hall, et.al., 1979). The studies that were conducted provide confidence in the SoCQ as a valid measure of the concerns of teachers.

Data Collection

Following approval by the Brandman Institutional Review Board (BUIRB) on October 9, 2014, study participation was secured (Appendix C). The copyright for the SoCQ is held by the Southwest Educational Development Laboratory (SEDL) in Austin, Texas. Permission to email, reprint, and/or distribute the questionnaire was granted on June 20, 2014 (Appendix D). Since altering the SoCQ questions may affect the validity and reliability of the measure, questions were not changed. In addition, permission to use
the SoCQ measure was based on not altering the questions, the SoCQ was used, as designed, for the study.

The informed consent (Appendix E) was used to provide the context and purpose for the study. This page included human-rights compliance information and confidentiality information about the nature of the study. Participants were informed that identifiable characteristics would be used for statistical purposes only. No statistical data was used for individual purposes, but was included in whole group reporting analysis. Access information for locating the online survey was provided along with a note mentioning that the survey should only take about 20 minutes to complete.

A series of demographic questions were completed prior to answering questions on the survey instrument (Appendix B). This page contained questions to ensure participants met identified criteria for study inclusion. Participants were asked about their age, gender, and years of teaching experience, as well as full-time certificated teaching status and content area of teaching position. Participants not teaching English Language Arts/Literacy or Mathematics on a full-time basis for the 2014-2015 school year, were instructed to end the survey.

The introductory section provided information on the purpose of the questionnaire, an explanation and example of how to complete the survey, and an indication of the innovation for consideration when responding (Appendix B). A note was included regarding the possibility the respondent may not consider all questionnaire items to be relevant or only of little relevance. These items should have been marked as “0” on the scale, whereas other items that represented current concerns were marked according to varying levels of higher intensity. A reminder was added in terms of the fact
that the innovation was not defined by a single definition, but should have been thought of in terms of the perception of the respondent.

On September 7, 2014, all 32 Fresno County school district superintendents of public schools were contacted via email to request permission to include teachers employed in their school district as potential study participants (Appendix A). Information was provided in this correspondence that identified the researcher and explained the purpose of the study. An initial follow up e-mail was sent one week following the initial request on September 14, 2014, if there was no response. A contact person was identified in each school district that provided permission for teachers to participate. This contact person was responsible for emailing the survey to teachers within their school district.

Once teachers were identified and following BUIRB approval on October 9, 2014, an email was sent to each participant on October 13, 2014 that contained the following: Informed consent, Research Participant’s Bill of Rights, introductory page, and link to the survey instrument (SoCQ). A reminder email was sent to all potential participants on October 20, 2014 since non-respondents were not identified due to confidentiality. The total administration period for the study occurred over approximately a four-week period.

**Data Analysis**

Collected data was analyzed. The first analysis addressed questions one through four and focused on determining if significant differences exist among teachers across the four concern clusters (unrelated, self, task, and impact).
Concerns. Items that are a matter of interest or importance to someone that may be experienced at varying levels of intensity (George, Hall, & Stiegelbauer, 2006). The item clusters are defined below:

1. Unrelated Concerns are defined as concerns unrelated to teaching such as concerns about passing a test.
2. Self-concerns are defined as concerns related to teaching but are egocentric and reflect feelings of inadequacy or self-doubt.
3. Task Concerns are defined as concerns related to the job of teaching such as logistics, preparation of materials, etc.
4. Impact Concerns are defined as concerns which center on how teaching affects students.

Research questions one through four were addressed through a statistical analysis that consisted of completing a t-test to measure the difference in gender and one-way ANOVAs to measure age and years of teaching. The analyses were broken down for each test by concern cluster for a total of four t-tests and eight ANOVAs. According to McMillan and Schumacher (2010), having multiple independent variables is preferred to arrive at an increased informational analysis. For each ANOVA a post hoc Tukey’s HSD was utilized to identify significant differences within the main effects (McMillan & Schumacher, 2010).

The second analysis addressed question five. This analysis consisted of a comparison of the profile for each level of the three independent variables (i.e. male teachers, teachers teaching for 6-10 years) for a total of three profiles. The profile consisted of the plotting on a graph of an individual’s concerns. According to George,
Hall, and Stiegelbauer (2006), utilizing a profile analysis is the most effective method for interpreting SoCQ data. The average score was plotted on the horizontal axis in the analysis concerns profile for all respondents in the level of the independent variable and the relative intensity (0-100) of those concerns on the vertical axis. Each profile was compared to standardized profiles from the SoCQ manual, which provided scoring and interpretation information (George, Hall, & Stiegelbauer, 2006). This comparison information was used to pinpoint areas of differentiated need as identified by the SoCQ.

**Limitations**

According to O’Sullivan, Rassel, and Berner (2003), short-term, cross-sectional designs contain inherent weaknesses. Research may be limited when data is simultaneously collected on multiple variables. Since only the SoCQ measure was used for data collection, the results were accurate to the level in which participants were able to accurately self-report their concerns.

The process of resolving concerns during the change process is highly individualized and personal. Time is required along with interventions that address both affective and cognitive factors. Therefore, simply acquiring additional information or experience will not provide resolution of earlier concerns with certainty. The same interventions cannot be implemented for every individual due to the personal nature of change.

Additionally, other demands on a study participant might inhibit the innovation from being a high priority, therefore limiting the participants’ desire to acquire new skills and experiences. Differentiated professional development can facilitate change; however, ultimately individuals will determine whether or not change will occur.
In each participating school district, the survey was sent to teachers by a site or district office official. Even though it was noted in the information page that completing the survey would not be required and participants may opt out at any time, this could have potentially still been a study limitation. Teachers may have felt compelled to complete the survey when provided by a person of authority; therefore creating concerns for study validity or bias.

Finally, the researcher serves in an administrative capacity in one of the school districts that participated in the study. Although teachers from the researcher’s school site were restricted from participation, the researcher is known throughout the school district. The potential bias of the researcher as a result of working in one of the participating school districts was considered in the interpretation of study results.

Summary

This purpose of this quantitative research study was to identify whether or not significant differences exist regarding teachers’ concerns about integrating technology for CCSS implementation. Participants were full-time certificated teachers employed to teach English Language Arts/Literacy or Mathematics in the 32 Fresno County school districts. Information gained from this research will be used to provide guidance for school districts as differentiated professional development and support is planned for teachers as they instruct 21st century students to prepare to meet the demands of their increasingly globalized future.
CHAPTER IV: RESEARCH, DATA COLLECTION, AND FINDINGS

Overview

This chapter describes the research, data collection from the SoCQ survey sent to certificated teachers in Fresno County, and findings used to conduct this study. The purpose, research questions, research methods and data collection procedures, population, sample, demographic data, presentation and analysis of data are reviewed. The data presented for each of the five research questions were analyzed and are reported both in table format and narrative. The four dependent variables (unrelated, self, task, and impact concern cluster levels) along with the three independent variables (gender, age, and years of teaching experience) are represented in each data analysis and presentation.

Purpose Statement

The purpose of this study was to examine the differences in teachers’ Stages of Concern with integrating technology for implementation of CCSS according to age, gender, and years of teaching. In addition it was the purpose of this study to use information obtained from the examination of differences to inform differentiated professional development plans to address the current paradigm shift in education as technology must be integrated for CCSS implementation.

Research Questions

The study sought to answer the following research questions:

1. Is there a significant difference in teachers’ unrelated Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?
2. Is there a significant difference in teachers’ *self* Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?

3. Is there a significant difference in teachers’ *task* Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?

4. Is there a significant difference in teachers’ *impact* Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?

5. What professional development opportunities and support structures are appropriate based on the Stage of Concern profile for each personal characteristic (age, gender, and years of teaching)?

**Research Methods and Data Collection Procedures**

This quantitative study proposed an examination of whether or not significant differences exist based on selected personal (age, gender, years of teaching) characteristics and teacher’s levels of concerns regarding the innovation of integration of technology for CCSS implementation. Only by understanding how the differences in selected personal (age, gender, years of teaching) characteristics influence teachers’ concerns can concerns be addressed in regards to the extent of implementation.

This study was a descriptive research study as described by McMillan and Schumacher (2010) in Research in Education. The descriptive design is an appropriate type of design for this study as its purpose is "to provide a summary of an existing phenomenon by using numbers to characterize individuals or groups" (p.22). Descriptive
studies, in which the researcher interacts with the participant, may involve surveys or interviews to collect the necessary information. The study was non-experimental due to the nature of the independent variables which were assigned and could not be manipulated. (McMillan & Schumacher, 2010). The independent variables included age, gender, and years of teaching experience. The intention of the quantitative study was to collect information from a predetermined population at a single point in time to understand the nature of the independent variables’ effects on the dependent variable (Johnson, 2001).

The quantitative study utilized a survey to identify the differences between independent variables and gather the information required to derive descriptive statistics related to teachers’ concerns. The survey was cross-sectional since it collected data at a single point in time using a self-reporting instrument. According to Creswell (2003), cross-sectional survey designs are well-suited for collecting simultaneous data on multiple variables and are the preferred design to gather information on the attitudes of individuals. Cross-sectional survey design was appropriate for this study since there were three independent variables consisting of eight factors; three levels of age, two of gender, and three of years of teaching experience. Data was collected during one online survey completion session regarding participants’ concerns regarding the innovation of integrating technology for CCSS implementation.

The survey instrument utilized for data collection in this study was the Stages of Concern Questionnaire (SoCQ) (Appendix B) from the Concerns-Based Adoption Model (CBAM) of change (George, Hall, & Stiegelbauer, 2006). The SoCQ is a measure used for understanding the change in perceptions of those involved in the adoption of an
innovation. Seven Stages of Concern (SoC) were identified by researchers as stages in which people progress as they are adopting and implementing an innovation (Hall & Hord, 2006).

The SoCQ contains 35 items in which the participants responded and which were used to measure the dependent variables, including unrelated, self, task, and impact. The seven stages of concern are represented by five questions each. These questions are randomly placed throughout the questionnaire. Respondents marked each item on a 0-7 point Likert scale based on how true the item seems to them in their present state of mind. The questionnaire asked respondents to share their attitudes, feelings, and concerns about the innovation on the 8-point Likert scale. Concerns were measured using the 8-point Likert scale, where 0 represents “irrelevance” and 7 represents “high relevance,” The low end of the scale contains the 0 and was used for marking items that seemed irrelevant to the respondent. The high end of the scale was represented by 7 and was marked for items that seemed very true for the respondent at the current point in time.

Following BUIRB approval, all 32 Fresno County school district superintendents of public schools were contacted via email to request permission to include the teachers employed in their school district as potential study participants (Appendix A). Information was provided in this correspondence that identified the researcher and explained the purpose of the study. An initial follow up e-mail was sent one week following the initial request if there was no response. A contact person was identified in each school district that provided permission for teachers to participate. This contact person was responsible for emailing the survey to teachers within the school district.
Once teachers were identified, an email was sent to each participant that contained the following: Informed consent, introductory page, Research Participant’s Bill of Rights, and link to the survey instrument (SoCQ). One week after sending the first reminder email, a second reminder email was sent to all potential participants since non-respondents were not identified due to confidentiality. The total administration period for the study occurred over approximately a four-week period, with actual data collection during two weeks; October 13-24, 2014.

A series of demographic questions was completed prior to answering questions on the SoCQ questionnaire (Appendix B). These questions were used to ensure participants met identified criteria for study inclusion. Participants were asked age, gender, and years of teaching experience, as well as full-time certificated teaching status and content area of teaching position. If a participant was not teaching English Language Arts/Literacy or Mathematics on a full-time basis for the 2014-2015 school year, they were directed to the end of the survey.

**Population**

Studying every certificated teacher in California was not an effective option and so a cross-section of the teaching population was utilized for the purpose of this study. Of the 32 Fresno County school districts invited to engage in the study, six districts agreed to participate. It was decided by the researcher to include all Fresno County school districts willing to participate since all are in the midst of integrating technology for CCSS implementation.
Sample

Due to practical constraints and accessibility, a convenience sample was utilized from six school districts located in Fresno County. Every certificated teacher within the six school districts was emailed and encouraged to complete the SoCQ survey. Only teachers that were employed full-time teaching English Language Arts/Literacy or Mathematics standards were allowed to actually complete the survey. English Language Arts/Literacy and Mathematics are the only two sets of CCSS that have been in full statewide implementation for one complete school year. Teachers not teaching full-time English Language Arts/Literacy or Mathematics were thanked for their participation and directed to end of the survey after completing the demographic survey questions. In an effort to avoid study bias, teachers employed at the researcher’s school site within one of the six districts were restricted from participating in the study.

Demographic Data

The study included responses from 305 certificated teachers employed within six Fresno County school districts. Of the 305 certificated teachers, 205 indicated they met criteria to complete the SoCQ survey. Full-time teaching status in English Language Arts/Literacy or Mathematics was the criteria to be met for study inclusion. Of the 205 SoCQ surveys completed, 167 were viable SoCQ surveys due to their completeness. Each participant was asked to provide the following demographic data: age, gender, and years of teaching experience.

Gender

The sample that completed the SoCQ survey was comprised of 38 male respondents (23%) and 129 female respondents (77%). According to the National Center
for Education Information (2011), eighty four percent of the current teaching population is female, which aligns with the percentages of survey respondents (Table 3).

Table 3.

Gender of Study Participants

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>129</td>
<td>77</td>
</tr>
<tr>
<td>Male</td>
<td>38</td>
<td>23</td>
</tr>
</tbody>
</table>

Age

Participants were stratified into three groups: Millenial (aged 20-32), Generation X (aged 33-49), and Baby Boomer (aged 50 and up) (Burmeister, 2008; Elliot, 2009; Lancaster & Stillman, 2002). These were determined based on common practice for labeling generations for general purposes of discussion and research.

The sample that completed the SoCQ survey was comprised of 28 respondents in the aged 20-32 years group (17%), 96 respondents in the aged 33-49 group (57%), and 44 respondents in the aged 50+ year group (26%) (Table 4).

Table 4.

Age in Years of Study Participants

<table>
<thead>
<tr>
<th>Age</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-32 years</td>
<td>28</td>
<td>17</td>
</tr>
<tr>
<td>33-49 years</td>
<td>96</td>
<td>57</td>
</tr>
<tr>
<td>50+ years</td>
<td>44</td>
<td>26</td>
</tr>
</tbody>
</table>

Years of Teaching Experience

Participants were stratified into three groups: 0-5 years of teaching experience, 6-10 years of teaching experience, and 11+ years of teaching experience. It is hypothesized that teachers who are relatively new to the profession and have been teaching less than
five years are still willing to try new instructional strategies. Teachers that have been
teaching six to 10 years are not yet as set in their use of instructional strategies and daily
practices. Teachers that have been teaching longer than 10 years are generally less
adaptable to change.

The sample that completed the SoCQ survey was comprised of 28 respondents in
the 0-5 years of teaching experience group (17%), 27 respondents in the 6-10 years of
teaching experience group (16%), and 113 respondents in the 11+ years of teaching
experience group (67%) (Table 5).

Table 5.
Years of Teaching Experience of Study Participants

<table>
<thead>
<tr>
<th>Years of Teaching Experience</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5 years</td>
<td>28</td>
<td>17</td>
</tr>
<tr>
<td>6-10 years</td>
<td>27</td>
<td>16</td>
</tr>
<tr>
<td>11+ years</td>
<td>113</td>
<td>67</td>
</tr>
</tbody>
</table>

Presentation and Analysis of Data

Research questions one through four were measured to determine if significant
differences existed for each concern cluster. The analysis performed included both a t-test
and two ANOVA’s per research question. The t-test utilizes the standard deviation of the
sample to interpret the significance of the individual variables (McMillan & Schumacher,
2010). An independent sample t-test was conducted to determine means for each of the
four concern clusters (unrelated, self, task, and impact) between two different populations
of subjects; male and female. One-way ANOVA tests were conducted on each
independent variable (age and years of teaching experience) to measure differences in
means for each of the four concern clusters (unrelated, self, task, and impact). An
ANOVA uses the variance of groups to calculate a value that reflects the degree of differences in the means (McMillan & Schumacher, 2010). Research question five was addressed after extracting data collected by the SoCQ instrument. A comparison of the profile for each level of the three independent variables (gender, age, years of teaching experience) was conducted for a total of three profiles. The profile consisted of the plotting the concerns of the sample group on a graph. Creating a profile analysis is the most effective method for interpreting SoCQ data (George, Hall, & Stiegelbauer, 2006). By following directions in the scoring manual regarding analysis of group data, high and low concerns were identified for the independent variables.

**Findings Reported by Research Question**

**Research Question One:**

Is there a significant difference in teachers’ unrelated Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?

An independent-sample t-test was conducted to compare means by gender of the items associated with the unrelated concern cluster by gender. There was no significant difference in scores between genders ($t$, $(165) = -467$, $p = 641$).

An ANOVA conducted specifically for the unrelated concern cluster show that difference in means for years of teaching $F$ $(2,165) = 1.477$, $p = .231$ was not significant (Table 6).
Table 6.

ANOVA Unrelated Concerns - Years of Teaching Experience

<table>
<thead>
<tr>
<th>Years of Teaching Experience</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Unrelated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>102.088</td>
<td>2</td>
<td>51.044</td>
<td>1.477</td>
<td>.231</td>
</tr>
<tr>
<td>Within Groups</td>
<td>5700.745</td>
<td>165</td>
<td>34.550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5802.833</td>
<td>167</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

An ANOVA conducted specifically for the unrelated concern cluster show that difference in means for age $F(2,165) = 1.362, p = .259$ was not significant (Table 7).

Table 7.

ANOVA Unrelated Concerns – Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Unrelated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>94.234</td>
<td>2</td>
<td>47.117</td>
<td>1.362</td>
<td>.259</td>
</tr>
<tr>
<td>Within Groups</td>
<td>5708.600</td>
<td>165</td>
<td>34.598</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5802.833</td>
<td>167</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Self-Stages of Concern Analysis

Research Question Two:

Is there a significant difference in teachers’ self Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?
An independent-sample t-test was conducted to compare means by gender of the items associated with the self-concern cluster by gender. There was no significant difference in scores between genders (t, (165) = -1.159, p = .248).

An ANOVA conducted specifically for the self-concern cluster show that difference in means for years of teaching F (2,165) = .078, p = .925 was not significant (Table 8).

Table 8.
ANOVA Self Concerns - Years of Teaching Experience

<table>
<thead>
<tr>
<th>Years of Teaching Experience</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Self</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>23.450</td>
<td>2</td>
<td>11.725</td>
<td>.078</td>
<td>.925</td>
</tr>
<tr>
<td>Within Groups</td>
<td>24949.401</td>
<td>165</td>
<td>151.208</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5802.833</td>
<td>167</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

An ANOVA conducted specifically for the self concern cluster show that difference in means for age F (2,165) = 1.403, p = .249 was not significant (Table 9).

Table 9.
ANOVA Self Concerns – Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Self</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>417.456</td>
<td>2</td>
<td>208.728</td>
<td>1.403</td>
<td>.249</td>
</tr>
<tr>
<td>Within Groups</td>
<td>24555.395</td>
<td>165</td>
<td>148.821</td>
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</tr>
<tr>
<td>Total</td>
<td>24972.851</td>
<td>167</td>
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<td></td>
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</tr>
</tbody>
</table>
Task Stages of Concern Analysis

Research Question Three:

Is there a significant difference in teachers’ task Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?

An independent-sample t-test was conducted to compare means by gender of the items associated with the task concern cluster by gender. There was no significant difference in scores between genders (t, (165) = -.412, p = .681).

An ANOVA conducted specifically for the task concern cluster show that difference in means for years of teaching F (2,165) = 2.270, p = .106 was not significant (Table 10).

Table 10.

ANOVA Task Concerns - Years of Teaching Experience

<table>
<thead>
<tr>
<th>Years of Teaching Experience</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Task</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>201.409</td>
<td>2</td>
<td>100.704</td>
<td>2.270</td>
<td>.106</td>
</tr>
<tr>
<td>Within Groups</td>
<td>7318.538</td>
<td>165</td>
<td>44.355</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7519.946</td>
<td>167</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
An ANOVA conducted specifically for the task concern cluster show that difference in means for age $F (2,165) = 3.829, p = .024$ was significant (Table 11).

Table 11.

ANOVA Task Concerns – Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Task</td>
<td>Between Groups</td>
<td>333.541</td>
<td>2</td>
<td>166.770</td>
<td>3.829</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>7186.406</td>
<td>165</td>
<td>43.554</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>7519.946</td>
<td>167</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Due to the significant difference indicated by the ANOVA, a Tukey’s Post Hoc analysis was conducted to identify which mean difference was significant between the age groups. The difference between the oldest age group (50+ years) and the youngest age group (20-32 years) was significant ($p = .02$).

**Impact Stages of Concern Analysis**

**Research Question Four:**

Is there a significant difference in teachers’ impact Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?
An independent-sample t-test was conducted to compare means by gender of the items associated with the impact concern cluster by gender. There was no significant difference in scores between genders (t, (165) = -.297, p = .768).

An ANOVA conducted specifically for the impact concern cluster show that difference in means for years of teaching F (2,165) = 2.931, p = .056 was not significant (Table 12).

Table 12.
ANOVA Impact Concerns - Years of Teaching Experience

<table>
<thead>
<tr>
<th>Years of Teaching Experience</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Impact</td>
<td>771.737</td>
<td>2</td>
<td>385.868</td>
<td>2.931</td>
<td>.056</td>
</tr>
<tr>
<td>Between Groups</td>
<td>21724.257</td>
<td>165</td>
<td>131.662</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>22495.994</td>
<td>167</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

An ANOVA conducted specifically for the task concern cluster show that difference in means for age F (2,165) = 191.627, p = .242 was not significant (Table 13).

Table 13.
ANOVA Task Concerns – Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Impact</td>
<td>383.255</td>
<td>2</td>
<td>191.627</td>
<td>1.430</td>
<td>.242</td>
</tr>
<tr>
<td>Between Groups</td>
<td>22112.739</td>
<td>165</td>
<td>134.017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within Groups</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Stages of Concern Profile Analysis

**Research Question Five:**

What professional development opportunities and support structures are appropriate based on the Stage of Concern profile for each personal characteristic (age, gender, and years of teaching)?

**Figure 3. Mean Percentage Cluster Score Comparisons by Gender**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Male Average</th>
<th>Female Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - Unrelated</td>
<td>91</td>
<td>87</td>
</tr>
<tr>
<td>1 - Self Informational</td>
<td>84</td>
<td>75</td>
</tr>
<tr>
<td>2 - Self Personal</td>
<td>78</td>
<td>78</td>
</tr>
<tr>
<td>3 - Task Management</td>
<td>80</td>
<td>77</td>
</tr>
<tr>
<td>4 - Impact Consequence</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>5 - Impact Collaboration</td>
<td>52</td>
<td>52</td>
</tr>
<tr>
<td>6 - Impact Refocusing</td>
<td>57</td>
<td>52</td>
</tr>
</tbody>
</table>

To view the pattern of concerns for respondents based on gender, the individual data for each gender group was aggregated into a profile presenting the primary mean percentile scores of each stage within each concern cluster level (unrelated, self, task, and
impact), and then the mean responses were graphed. Graphing the overall mean percentile concern score by gender indicated that the highest concerns were unrelated-unconcerned for both groups. The male gender group scored slightly higher on self-informational and task-management concerns. Both gender groups had the lowest concern in the area of impact-consequence with a slight tailing-up of impact-refocusing concerns for the male gender group (Figure 3).

Figure 4. Mean Percentage Cluster Score Comparisons by Years of Teaching

<table>
<thead>
<tr>
<th>Years Teaching Profile</th>
<th>Unrelated Unconcerned</th>
<th>Self Informational</th>
<th>Self Personal</th>
<th>Task Management</th>
<th>Impact Consequence</th>
<th>Impact Collaboration</th>
<th>Impact Refocusing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average 0-5</td>
<td>91</td>
<td>75</td>
<td>76</td>
<td>69</td>
<td>43</td>
<td>64</td>
<td>52</td>
</tr>
<tr>
<td>Average 6-10</td>
<td>94</td>
<td>75</td>
<td>76</td>
<td>77</td>
<td>33</td>
<td>52</td>
<td>60</td>
</tr>
<tr>
<td>Average 11+</td>
<td>87</td>
<td>75</td>
<td>78</td>
<td>80</td>
<td>33</td>
<td>48</td>
<td>52</td>
</tr>
</tbody>
</table>

To view the pattern of concerns for respondents based on years of teaching experience, the individual data for each years of teaching group (0-5 years, 6-10 years, and 11+ years) was aggregated into a profile presenting the primary mean percentile
scores of each stage within each concern cluster level (unrelated, self, task, and impact), and then the mean responses were graphed. Graphing the overall mean percentile concern score by years of teaching group indicated that the highest concerns were unrelated unconcerned for all groups. As indicated for all age groups, self-personal concerns were higher than self-informational. This is referred to as a negative one-two split (George, Hall, & Stiegelbauer, 2006). There was a significant decline for all groups from task-management to impact consequence, although the decline was less for the 0-5 years of teaching group. There was a marked tailing-up on impact-collaboration concerns and then a slightly continued tailing-up of impact refocusing concerns for the 6-10 years of teaching and 11+ years of teaching groups, but not the 0-5 years of teaching group (Figure 4).

Figure 5. Mean Percentage Cluster Score Comparisons by Age
To view the pattern of concerns for respondents based on age in years, the individual data for each years of age group (20-32 years, 33-49 years, and 50+ years) was aggregated into a profile presenting the primary mean percentile scores of each stage within each concern cluster level (unrelated, self, task, and impact), and then the mean responses were graphed. Graphing the overall mean percentile concern score by age in years indicated that the highest concerns were unrelated-unconcerned for all groups. The 20-32 age group has a distinctly higher self-informational than self-personal score. The 33-40 age group has the negative one-two split. All age groups had a significant decline regarding impact-consequence concerns and then a tailing-up on impact collaboration concerns. The 50+ age group also showed a tailing up of impact-refocusing concerns (Figure 5).

Summary

Chapter Four reviewed the purpose, research questions, research methods and data collection procedures, population, sample, demographic data, presentation and analysis of data are reviewed. Data were analyzed and presented for each of the five research questions. This information was reported both in table format and narrative. The four dependent variables (unrelated, self, task, and impact concern cluster levels) along with the three independent variables (gender, age, and years of teaching experience) were represented in each data analysis and presentation.
CHAPTER V: FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this quantitative study was to examine the differences in teachers’ Stages of Concern with integrating technology for CCSS implementation. Only by understanding how the differences in personal characteristics influence teachers’ concerns can concerns be addressed in regards to the extent and success of implementation of the innovation. It was also the purpose of this study to utilize information obtained from the analysis of differences to inform professional development plans as school districts address the paradigm shift in education as technology is integrated for CCSS implementation.

Five research questions were addressed in this study. Research questions one through four provided for an examination of the differences in teachers’ concerns. Research question five provided information to inform professional development opportunities and support structures for teachers as they integrate technology for CCSS implementation.

This quantitative study utilized the 35 item SoCQ survey from the CBAM of change to identify differences between the independent variables (age, gender, and years of teaching experience) to obtain descriptive statistics related to teachers’ concerns. The SoCQ is a measure used for understanding change in perceptions of those people involved in the adoption of an innovation. Seven Stages of Concern (SOC), which fall under four main concern clusters, were identified by researchers as stages in which people progress as they are adopting and implementing an innovation (Hall & Hord, 2006).
A cross section of the teaching population in Fresno County as representative of the teaching population in California participated in the study. All 32 Fresno County school districts were invited to engage in the study; six school districts agreed to participate. The study sample consisted of 168 certificated teachers employed full time teaching English Language Arts/ Literacy and/ or Mathematics. To avoid potential issues related to study bias, teachers employed at the researcher’s school site within one of the six districts were restricted from study participation.

**Major Findings**

This study sought to understand the concerns of teachers undergoing the transformational, innovative change of integrating technology for CCSS implementation. Limited research is available on this topic. Furthermore, limited research exists that seeks to understand how age, gender, and years of teaching experience impact teachers’ level of concerns and how that information is relevant in differentiating effective professional development and support opportunities. Research conducted to study the concerns of individuals in the change process suggested that demographic variables have no significant relevance with concerns (Hall, George, & Rutherford, 1979); however, when studying innovations related to technology, other researchers have found a correlation between demographic variables and concerns (Adams, 2002). Therefore, it was likely that in adopting technology related innovations, user concerns would be differentiated based on demographic variables (Kagima & Hausafus, 2000; Mitra, Steffenmeier, Lenzmeier, & Massoni, 1999). Initial chaos is common whether innovational change is imposed on teachers, or if it is voluntary (Fullan, 2005). If the change is incorporated systematically
with adequate support, the change can lead to professional growth and increased self-efficacy with the innovation (Fullan, 2005).

**Question One Analysis and Discussion**

Research Question One:

Is there a significant difference in teachers’ unrelated Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?

According to Hall & Hord (1987, 2001), a high unrelated concerns score using the SoCQ instrument indicates that there is little concern toward or involvement with a particular innovation; in this case, integrating technology for implementation of CCSS. An analysis of the variables influencing unrelated concerns found that all participants had high unrelated concerns with slightly lower levels for females, teachers in the 33-49 age group, and teachers with 11+ years of teaching experience. Teachers that are new to teaching may have limited interest or involvement in the innovation as their concerns may be focused elsewhere. Teachers that have more years of teaching experience may also have lower unrelated concerns scores because the pervasiveness of technology in society means they have had at least some exposure to the technologies they may encounter while teaching.

**Question Two Analysis and Discussion**

Research Question Two:

Is there a significant difference in teachers’ self-Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?
According to Hall & Hord (1987, 2001), a high self-concerns score using the SoCQ instrument indicates the individual teacher is uncertain about the demands of the innovation; in this case, integrating technology for implementation of CCSS, and his or her adequacy to meet those demands. They may require more information about the innovation. Self-concerns are intrinsic to the individual teacher and often represent a desire to learn more about the innovation and how it will personally impact them (Hall & Hord, 1987, 2001).

While the age variable had self-informational scores within five percentage points of each age group, the 50+ years’ age group was slightly higher than the 20-32 age group and 33-49 age group. The age variable for self-personal increased by 10 percentage points between age groups, with the 50+ age group having the highest score. The authors of the CBAM model do not necessarily consider age as a predictive variable for user’s concerns when in the midst of a technology related innovation (Hall, George, & Ruthorford, 1979); however, age has sometimes been found to correlate with computer use and attitudes towards technology. In previous SOC research studies, Atkins and Vasu (2000) found no relationship between age and stages of concern, whereas Adams (2002) found that younger female teachers with less teaching experience had higher levels of technology integration. This may imply that older teachers have more interest in knowing more about the innovation of integrating technology for CCSS implementation. Younger teachers have more recently completed their teacher training programs and have most likely been somewhat instructed on the implementation of CCSS and may not require as much information.
There was less of a difference in scores within the years of teaching groups; only two percentage points between newer teachers (0-5 years of teaching experience) and teachers with 11+ years of teaching experience. Teachers that have more teaching experience and are already tenured may not be as concerned about the personal effects of the innovation. The fact that self-personal concern scores were somewhat elevated for all three years of teaching groups leads to the question regarding administrative support and sufficient professional development. Both support and differentiated professional development are needed to presumably address and alleviate high self-personal concerns (Baldwin, 1998; Hall & Hord, 2001; Covington, Petherbridge & Warren, 2005; D.L. Rogers, 2000). After all, teachers may feel there will be pressure from administrators to use the technology for CCSS implementation, but no tangible administrative support or effective professional development is provided.

**Question Three Analysis and Discussion**

**Research Question Three:**

Is there a significant difference in teachers’ task Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?

High task concerns reflect an individual teacher who is still intrinsically focused on the innovation of integrating technology for CCSS implementation; however, their focus is on the actual processes and tasks involved in using the innovation (Hall & Hord, 2001). This cluster of concern encompasses issues related to efficiency, organizing, managing, scheduling, and demands on time (Hall & Hord, 2001). With planning to address task concerns, teachers need to be approached with “how-to” interventions that
will help them learn how to use the innovation effectively and efficiently with support rather than a “tell me about it” philosophy (Bradshaw, 2002; Hall & Hord, 2001).

An analysis of the variables influencing task concerns found that one personal variable (age) was significantly different (.024) from the other two variables (gender and years of teaching experience). An analysis of the years of teaching experience, although not significantly different, did show an 11 percentage point difference between newer teachers (0-5 years) and teachers that had 11+ years of teaching experience. This may reflect the veteran teacher’s desire to embrace the innovation of integrating technology for CCSS implementation, but also the reality of the work involved with meeting the daily, immediate needs of students. Finding time for additional responsibilities is difficult. This may also be reflective of the fact that the Millenial age group (20-32 years) comprise the 20% of the teaching population not categorized as digital natives (Feistritzer, 2011). Digital natives, having been born into the digital age, tend to adapt more quickly to adopting the demands required for technology use (Prensky, 2001). The two older age groups (Generation X; aged 33-49, & Baby Boomer; aged 50 and up) cannot become digital natives, but with differentiated professional development and sufficient support, they can gain digital wisdom and move towards digital enrichment, thus reducing the digital divide (Prensky, 2009).

**Question Four Analysis and Discussion**

**Research Question Four:**

Is there a significant difference in teachers’ impact Stages of Concern regarding integration of technology for CCSS implementation based on personal characteristics (age, gender, and years of teaching)?
Unrelated, self, and task concerns are all intrinsic to the individual teacher, as this person starts to understand the innovation and begins to devise strategies for managing the innovation; in this case, integrating technology for CCSS implementation. Once intrinsic concerns are resolved, the teacher moves towards more extrinsic concerns, such as how the innovation may be used with colleagues, how the innovation impacts students, and how it may be used in new ways, or even improved (Hall & Hord, 2001).

Over all, the impact concern cluster had the lowest scores throughout analysis of data, with only one particular area of difference. An analysis of the variables influencing impact concerns found that one personal variable (years of teaching experience) was almost significantly different (.056) from the other two variables (gender and age). The newer teacher (0-5 years of teaching experience) had nearly significantly higher scores on impact-consequence and impact collaboration concerns. It may be inferred that newer teachers are still learning the intrinsically focused “art of teaching” itself and although more digitally savvy than the other two groups, may be concerned about finding their role in the larger teaching network at the school site and unsure about how to be of help to peers. Teachers that are more experienced may have additional time and energy for collaboration while being better informed regarding individual student needs.

The overall lower impact concern cluster scores represents the developmental nature of the SOC as experienced by participants in a complex change process. During early stages of integrating technology for CCSS implementation, it is expected that teachers will be more concerned about the impact on themselves (self-personal) as well as on managing the change (task-management). Once intrinsic concerns diminish in
general, it can be hypothesized, that teachers’ concerns will then turn to the impacts of the change (Hord, Ruthorford, Huling-Austin, & Hall, 1987).

**Question Five Analysis and Discussion**

**Research Question Five:**

What professional development opportunities and support structures are appropriate based on the Stage of Concern profile for each personal characteristic (age, gender, and years of teaching experience)?

**Gender Profile**

Graphing the overall mean percentile concern score by gender indicated that the highest concerns were unrelated-unconcerned for both groups. Because self-informational and self-personal scores are also high, it can inferred that both groups are interested in learning more about the innovation; in this case, integrating technology for CCSS implementation. They may also need additional information (George, Hall, & Stiegelbauer, 2006).

The male gender group scored slightly higher on self-informational and task-management concerns. Both gender groups had the lowest concern in the area of impact-consequence with a slight tailing-up of impact-refocusing concerns for the male gender group. It can be inferred that the male gender group has ideas that may be seen as having more merit than the proposed innovation (George, Hall, & Stiegelbauer, 2006).

**Years of Teaching Profile**

Graphing the overall mean percentile concern score by years of teaching group indicated that the highest concerns were unrelated unconcerned for all groups. As indicated for all age groups, self-personal concerns were higher than self-informational.
This is referred to as a negative one-two split (George, Hall, & Stiegelbauer, 2006). This profile indicates individuals with various degrees of potential resistance and doubt about the innovation. It may be inferred that they may have higher concerns about an innovation’s effect on personal position than the desire to learn more about the innovation. There was a significant decline for all groups from task-management to impact consequence, although the decline was less for the 0-5 years of teaching group. This may indicate relatively intense concerns regarding time and logistics related to the innovation; however there are less concerns about the impact of the innovation on students (George, Hall, & Stiegelbauer, 2006). There was a marked tailing-up on impact-collaboration concerns and then a slightly continued tailing-up of impact refocusing concerns for the 6-10 years of teaching experience and 11+ years of teaching experience groups, but not the 0-5 years of teaching experience group. This tailing-up for the 6-10 and 11+ years of teaching experience groups may indicate a warning that unrelated-unconcerned individuals might be resistant to the innovation (George, Hall, & Stiegelbauer, 2006). The 0-5 years of teaching experience group may be more concerned with collaborating with peers regarding the innovation and less inclined to resist due to non-tenure teaching status.

Age Profile

Graphing the overall mean percentile concern score by age in years indicated that the highest concerns were unrelated-unconcerned for all groups. Unconcerned, self, and task concern cluster level scores were higher for the 50+ years age group supporting the fact that 80% of the teaching population were not born during the digital age and must learn to teach students that often speak a different language as digital natives (Prensky,
The 20-32 age group has a distinctly higher self-informational than self-personal score indicating this group overall has a positive, proactive perspective, with little fear of the personal effects integrating technology for CCSS implementation will have on their teaching. This group is open and interested in learning more about the innovation (George, Hall, & Stiegelbauer, 2006). The 33-40 age group has the negative one-two split depicting various degrees of doubt and potential resistance to the innovation. All age groups had a significant decline regarding impact-consequence concerns and then a tailing-up on impact collaboration concerns. This would infer less concern with the innovation’s impact on students and higher concern with coordinating with others in using the innovation. The 50+ age group also showed a tailing up of impact-refocusing concerns which may indicate a warning that unrelated-unconcerned individuals might be resistant to the innovation (George, Hall, & Stiegelbauer, 2006).

Unexpected Findings

An unexpected finding in this study is that there were not additional significant differences identified in the analysis of data. Given the assumptions that exist regarding age, gender, and years of teaching experience, it was expected that significant differences in concerns would have manifested within the data. The number of participants was low (n=167) and so it could be noted that a significant increase in responses may have more closely aligned with assumptions regarding technology use for instructional purposes.

Conclusions

The current research intended to examine the differences in teachers’ Stages of Concern with integrating technology for CCSS implementation according to age, gender, and years of teaching experience. Additionally, it was the purpose of this research to use
information gained from this examination to inform differentiated professional development. In some cases the findings from this research support previous studies and in other cases, provide insight into additional variables that may be further explored.

Age was a significantly different variable when examining task clusters of concerns. Older teachers (50+ years) had significantly higher levels of task concerns than the teachers from the digitally native Millenial generation (20-32 years). This makes sense given the fact that the younger age group was born into the digital age and have been interacting with technology their entire life. It cannot be assumed that age equates to digital wisdom; however, familiarity and comfort level with technology should lead to lower concerns regarding tasks associated with integrating technology into instruction. In previous SOC studies, Atkins and Vasu (2000) found no relationship between age and the stage of concern. In another study conducted by North Carolina State University (2008) utilizing the Learning in a Technology Rich Environment (LITRE) survey, no relationship was found between instructional technology use and age. Thus the current study somewhat contradicts that research, and indicates that personal variables may be predictive of levels of concern.

Gender was not found to be a significantly different variable in this current research study, which aligns with previous research conducted by Hall, George, and Ruthorford (1979). However, several researchers that have used the SOC have found that gender does correlate with an individual’s stage of concern (Adams, 2002). Research conducted by Kagmina and Hausafus (2000) found that female teachers had significantly lower self-personal scores than males. Given the fact that the current study had a disproportionate number of female participants (n=129) and male participants (n=38), the
question must be asked if results would have differed with an equal number of female and male participants.

Years of teaching experience was remarkably close to being a significantly different variable (.056) in this current research study. Teachers with more years of teaching experience were actually less concerned about the impact of the innovation than teachers with 6-10 years of teaching experience. In the previously mentioned study by Kagmina and Hausafus (2000), it was concluded that teachers with more than 10 years of teaching experience were less confident in their ability to integrate technology for instructional purposes. The results of the current study may highlight the understanding that veteran teachers are not as familiar with technology and its instructional implications. They may appear less concerned, but only because they lack the knowledge regarding how to collaborate regarding technology use and therefore have a vague understanding of how to use it to impact students. Given the developmental nature of the SOC, it is implied that teachers that have higher levels of impact concerns have already passed through the intrinsic stages of concern and are therefore more highly evolved in their ability to collaborate and refocus. Teachers with 6-10 years of teaching experience and those with 11+ years had identical scores in self-informational concern scores and almost identical scores in self-personal concerns. Current research brings into question previously conducted research regarding years of teaching experience and SOC.

**Implications for Action**

Results from this study should propel all stakeholders involved in the paradigm shift in education to prepare students with the 21st century skills needed to compete in an ever increasing global society, to more closely analyze professional development plans.
A clearly articulated plan that provides for differentiated professional development and support for teachers that takes into consideration their developmental stages of concern must be designed and implemented with fidelity. Teachers do not have time to spend in ineffective, poorly designed professional development settings that do not provide the knowledge and experience needed integrate technology for CCSS implementation.

**Addressing Unrelated Concerns**

Teachers with high levels of unrelated concerns may benefit from being provided with general information about integrating technology for CCSS implementation as an entry level for acquaintance purposes. Teachers’ level of unrelated concerns may be due in part to their lack of knowledge and understanding of the innovation.

**Addressing Self Concerns**

For teachers with high self-informational concerns, support can be provided in a variety of ways. Conversations, quick staff meeting updates, and newsletters are simple informational interventions. Sharing an innovation overview with teachers during the planning process may alleviate initial concerns (Bradshaw, 2000). Teachers with high self-personal concerns will benefit from one-to-one personal support as they begin to integrate technology for CCSS implementation (Dusick & Yildirim, 2000; Hall & Hord, 1987). They may need a supportive peer coach or grade level team whom they can contact (Gandalfo, 1998; Hall & Hord, 2001). These teachers require differentiated professional development training that addresses affective concerns (Covington, et.al., 2005 & Rogers, 2000) and provides opportunities for teachers to connect with peers that have already passed through the self-stages of concern (Holloway, 2003).
**Addressing Task Concerns**

Since teachers in this stage have concerns about logistical details such as time and management, they will benefit most from professional development that shows how to effectively and efficiently accomplish tasks related to integrating technology for CCSS implementation (Bradshaw, 2002; Hall & Hord, 2001). Interventions should be provided that specifically address their logistical fears. Tutorials, explanatory web pages, videos, workshops, as well as face to face professional development will be helpful. Opportunities should be planned for the teacher to integrate technology for CCSS implementation and then support provided during this phase of the innovation. Beginning, intermediate, and advanced professional development sessions should be offered and self-selective so teachers can gain the depth of information needed to address their topic of concern (Rogers, 2000). Furthermore, teachers should have opportunities to visit classrooms where technology is already being integrated for CCSS implementation to alleviate their task concerns.

**Addressing Impact Concerns**

Previously completed research have shown an increase in a respondent’s participation in technology-related professional development increases impact concern cluster scores (Atkins & Vasu, 2000; Gershner & Snider, 2001; Casey, Harris, & Rakes, 2004; Ansah & Johnson, 2003; Dobbs, R.L., 2004). An ideal concerns-based profile is a teacher with high impact concerns, as this theoretically indicates an active, engaged user of the innovation who is thinking about the impact of the technology integration for CCSS implementation on student learning and working collaboratively with other (Hall & Hord, 2001). Research provides valid evidence to support the need for teachers to have
a variety of differentiated professional development activities in order to move beyond intrinsic cluster concerns (unrelated, self, and task) to the ideal impact cluster of concern focusing on students learning and peer collaboration.

**Evaluation**

District and school site administrators, along with professional development planners and providers, should evaluate over time how teachers’ SOC are changing as they integrate technology for CCSS implementation. Teachers should developmentally move from the intrinsic dimensions of self and task to that of impact. Only through systematic movement will teachers reach high degrees of self-efficacy and effectiveness in preparing 21st century students.

**Recommendations for Further Research**

Based on the findings of this study, the recommendations for further research are as follows:

1. Conduct a study to examine the differences in Stages of Concern of site administrators.
2. Conduct a study to examine Levels of Use among teachers in varying levels of integrating technology for CCSS implementation.
3. Conduct a study to examine how teachers modify the innovation of integrating technology for CCSS implementation to fit their students and personal teaching style.
4. Conduct a qualitative study to identify specific interventions requested by teachers based on their stage of concern.
5. Conduct a replicate study over a longer period of time in an effort to
determine if additional participants would correlate to additional significance in differences between variables.

6. Conduct a quantitative study that measures the mean time it takes for teachers to developmentally progress through the stages of concern. Examine if there are ways to expedite this process.

**Concluding Remarks and Reflections**

Improved student achievement and enhanced educator capabilities are often the intent of educational innovations. Creating systemic change is transformational in magnitude as evidenced in the current paradigm shift as educators grapple with how to provide a 21st century education to prepare 21st century students to not only survive, but professionally compete in an ever increasing global society. However, in many classrooms, technology integration is a significant challenge for teachers lacking digital wisdom. This challenge is often met with resistance and inexperience. It is vitally important that school district administrators and professional development planners advocate for innovation success through the understanding and acceptance of teachers’ concerns and their progression in the use of and implementation of the innovation; in this case, the integration of technology for CCSS implementation.

This research underscores the fact that teacher beliefs regarding pedagogy, technology, willingness to change, and perceptions regarding integration of new innovation can be deeply rooted. These beliefs manifest as concerns that become barriers to change. Unless teacher concerns are identified, recognized as valid, and a strategic plan developed to train and support teachers as they progress through their stages of concern, the necessary shift in pedagogy, self-efficacy, and attitude will not occur.
Differentiated professional development and support must be designed based on teachers’ concerns in order for appropriate interventions to be implemented. There is not a “one size fits all” approach that will be effective for every teacher. Without this recognition and understanding of teachers’ Stages of Concern, desired impacts from integrating technology for CCSS implementation will neither be attained nor sustained.
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Subject Line: Invitation to Participate in Research

Dear (Name of Superintendent),

I am writing to you in hope that you will approve participation of your teachers in a research study regarding technology integration for Common Core State Standards (CCSS) implementation. The purpose of this study is to examine the differences in teachers’ levels of concern with integrating technology for implementation of CCSS according to age, gender, and years of teaching and how that information can be used to design effective differentiated professional development programs.

As participants in this study, teachers will be asked to complete either an online or paper survey (their choice) during the month of September 2015. The survey will take approximately 15 minutes to complete. Responses related to or containing identifiable characteristics will be used for statistical purposes only and will not be disclosed or used in identifiable form for any other purposes. Data from multiple school districts will be analyzed and reported as a group; however, a report can be provided that shares information specific to your district. This information may prove valuable as planning for technology integration for CCSS implementation continues across the state.

This study will help me complete the requirements of my doctoral dissertation research in the Educational Organizational Leadership program through Brandman University. Your school district participation is greatly appreciated.

Thank you for your time and assistance,

Sincerely,

Tami Boatright
Doctoral Student
EdD in Organizational Leadership
Brandman University
boat2601@mail.brandman.edu
(559) 352-1687
Appendix B: Questionnaire Used in the Study

Concerns about the Innovation

Demographics

Please complete the following:

1. Are you currently teaching full-time in your school district?
   Yes ____ No ____

2. Are you teaching either English Language Arts/Literacy or Mathematics?
   Yes ____ No ____

If you answered no to one or both questions, please end the survey and do not continue.

If you answered yes to both questions, please continue with the questions below and the survey on the following pages.

1. What is your age in years? __________
2. What is your gender? Male ☐ Female ☐
3. How many years of teaching experience do you have? __________

Thank you for your participation,
Tami Boatright
Researcher
Concerns about the Innovation

(Questions 1 – 35, reprinted with permission of the Southwest Educational Developmental Laboratory)

The purpose of this questionnaire is to determine what people who are using or thinking about using various innovations are concerned about at various times during the innovation adoption process. The items were developed from typical responses of school and college teachers, who ranged from no knowledge at all about various innovations to many years of experience in using them. Therefore, some of the items on this questionnaire may appear to be of little relevance or irrelevant to you at this time. For the completely irrelevant items, please circle “0” on the scale. Other items will represent those concerns you do have, in varying degrees of intensity, and should be marked higher on the scale.

For example:

This statement is very true of me at this time. 0 1 2 3 4 5 6 7

This statement is somewhat true of me now. 0 1 2 3 4 5 6 7

This statement is not at all true of me at this time. 0 1 2 3 4 5 6 7

This statement is irrelevant to me. 0 1 2 3 4 5 6 7

Please respond to the items in terms of your present concerns, or how you feel about your involvement with Integrating Technology for English Language Arts/Literacy or Mathematics Common Core State Standards (CCSS) Implementation. This would involve utilizing any technological device (i.e. laptop, tablet, cell phone, desk top) during CCSS instruction. This technological device may be used by you the teacher, students, or both.

Remember to respond to each item in terms of your present concerns about your involvement with Integrating Technology for English Language Arts/Literacy or Mathematics Common Core State Standards (CCSS) Implementation. This is considered the innovation for this study.

Due to varying levels of current implementation within your school district, some questions may not seem applicable.

Thank you for taking time to complete this survey.
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<tr>
<td>Irrelevant</td>
<td>Not true of me now</td>
<td>Somewhat true of me now</td>
<td>Very true of me now</td>
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1. I am concerned about students’ attitudes toward this innovation. 0 1 2 3 4 5 6 7
2. I now know of some other approaches that might work better. 0 1 2 3 4 5 6 7
3. I don’t even know what the innovation is. 0 1 2 3 4 5 6 7
4. I am concerned about not having enough time to organize myself each day. 0 1 2 3 4 5 6 7
5. I would like to help other faculty in their use of the innovation. 0 1 2 3 4 5 6 7
6. I have a very limited knowledge of the innovation. 0 1 2 3 4 5 6 7
7. I would like to know the effect of reorganization on my professional status. 0 1 2 3 4 5 6 7
8. I am concerned about conflict between my interests and my responsibilities. 0 1 2 3 4 5 6 7
9. I am concerned about revising my use of the innovation. 0 1 2 3 4 5 6 7
10. I would like to develop working relationships with both our faculty and outside faculty using this innovation. 0 1 2 3 4 5 6 7
11. I am concerned about how the innovation affects students. 0 1 2 3 4 5 6 7
12. I am not concerned about the innovation at this time. 0 1 2 3 4 5 6 7
13. I would like to know who will make the decisions in the new system. 0 1 2 3 4 5 6 7
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<td>Irrelevant</td>
<td>Not true of me now</td>
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<td>14.</td>
<td>I would like to discuss the possibility of using the innovation.</td>
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<td>15.</td>
<td>I would like to know what resources are available if we decide to adopt the innovation.</td>
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<td>16.</td>
<td>I am concerned about my inability to manage all that the innovation requires.</td>
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<td>17.</td>
<td>I would like to know how my teaching or administration is supposed to change.</td>
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<td>18.</td>
<td>I would like to familiarize other departments or persons with the progress of this new approach.</td>
<td>0 1 2 3 4 5 6 7</td>
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<td>19.</td>
<td>I am concerned about evaluating my impact on students.</td>
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<td>20.</td>
<td>I would like to revise the innovation’s approach.</td>
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<td>21.</td>
<td>I am preoccupied with things other than the innovation.</td>
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<td>22.</td>
<td>I would like to modify our use of the innovation based on the experiences of our students.</td>
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<td>23.</td>
<td>I spend little time thinking about the innovation.</td>
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<td>24.</td>
<td>I would like to excite my students about their part in this approach.</td>
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<td>25.</td>
<td>I am concerned about time spent working with nonacademic problems related to this innovation.</td>
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<td>26.</td>
<td>I would like to know what the use of this innovation will require in the immediate future.</td>
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<td>0</td>
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<td></td>
<td>Somewhat true of me now</td>
<td></td>
<td>Very true of me now</td>
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</table>

27. I would like to coordinate my efforts with others to maximize the innovation’s effects. 0 1 2 3 4 5 6 7

28. I would like to have more information on time and energy commitments required by the innovation. 0 1 2 3 4 5 6 7

29. I would like to know what other faculty are doing in this area. 0 1 2 3 4 5 6 7

30. Currently, other priorities prevent me from focusing my attention on the innovation. 0 1 2 3 4 5 6 7

31. I would like to determine how to supplement, enhance, or replace the innovation. 0 1 2 3 4 5 6 7

32. I would like to use feedback from the students to change the program. 0 1 2 3 4 5 6 7

33. I would like to know how my role will change when I am using the innovation. 0 1 2 3 4 5 6 7

34. Coordination of tasks and people is taking too much of my time. 0 1 2 3 4 5 6 7

35. I would like to know how the innovation is better than what we have now. 0 1 2 3 4 5 6 7
Appendix C. BUIRB Approval

BRANDMAN UNIVERSITY INSTITUTIONAL REVIEW BOARD
IRB Application Action – Approval
Date: 9/22/2014

Name of Investigator/Researcher: Tami Boatright
Faculty or Student ID Number: 800415528

Title of Research Project:
Technology Integration for Common Core State Standards Implementation: Developing Differentiated Professional Development based on the Concerns-Based Adoption Model

Project Type: ☑ New ☐ Continuation ☐ Resubmission

Category that applies to your research:
☑ Doctoral Dissertation EdD
☐ DNP Clinical Project
☐ Masters’ Thesis
☐ Course Project
☐ Faculty Professional/Academic Research
☐ Other:

Funded: ☑ No ☐ Yes
(Funding Agency; Type of Funding; Grant Number)

Project Duration (cannot exceed 1 year): 3 months
Principal Investigator’s Address: 5890 W. Fremont Ave., Fresno, CA 93722
Email Address: boat2601@mail.brandman.edu Telephone Number: 559-352-1687
Faculty Advisor/Sponsor/Chair Name: Dr. Tamerin Capellino
Email Address: capellin@brandman.edu Telephone Number: 951-285-0982

Category of Review:
☐ Exempt Review ☑ Expedited Review ☐ Standard Review

Brandman University IRB Rev, 3.20.14 Adopted November 2013

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I have completed the NIH Certification and included a copy with this proposal

☐ NIH Certificate currently on file in the office of the IRB Chair or Department Office

Signature of Principal Investigator: Tami Boatright
Date: 9/22/2014

Signature of Faculty Advisor/ Sponsor/Dissertation Chair: Tamerin Capellino
Date: 9/22/2014
BRANDMAN UNIVERSITY INSTITUTIONAL REVIEW BOARD
IRB APPLICATION ACTION – APPROVAL
COMPLETED BY BUIRR

IRB ACTION/APPROVAL

Name of Investigator/Researcher:

- [ ] Returned without review. Insufficient detail to adequately assess risks, protections and benefits.
- [ ] Approved/Certified as Exempt form IRB Review.
- [ ] Approved as submitted.
- [X] Approved, contingent on minor revisions (see attached)
- [ ] Requires significant modifications of the protocol before approval. Research must resubmit with modifications (see attached)
- [ ] Researcher must contact IRB member and discuss revisions to research proposal and protocol.

Level of Risk:  
- [ ] No Risk  
- [X] Minimal Risk  
- [ ] More than Minimal Risk

IRB Comments:

Make sure to mention Bill of Rights on consent form:

IRB Contact

Name: Carlos Guzman
Telephone: Email: cguzman@brandman.edu
IRB Certification Number: 09231401 Date: 9/29/14

________________________

Revised IRB Application  
- [X] Approved  
- [ ] Returned

Name: Keith Larick
Telephone: Email: Date: 10/09/14

________________________

Brandman University IRB Rev. 3.20.14 Adopted November 2013
Appendix D: Permission to Use SoCQ Instrument

SEDL License Agreement

To: Tami Boatright (Licensee)
   5690 W. Fremont Ave.
   Fresno, CA 93722

From: Nancy Reynolds
   Information Associate
   SEDL
   Information Resource Center-Copyright Permissions
   4700 Mueller Blvd.
   Austin, TX 78723

Subject: License Agreement to reprint and distribute SEDL materials

Date: May 28, 2014

Thank you for your interest in using the Stages of Concern Questionnaire (SoCQ 075) published by SEDL in the following publications: Measuring Implementation in Schools: The Stages of Concern Questionnaire written by Archie A. George, Gene E. Hall, and Suzanne M. Stegelbauer in 2006, as Appendix A, pages 79-82; in electronic format as SEDL's Stages of Concern Questionnaire (SoCQ) Online; and in the book Taking Charge of Change, revised ed., published in 2006 and written by Shirley M. Hord, William L. Rutherford, Leslie Huling, and Gene E. Hall, on pages 48-49.

SoCQ 075 will be referred to as the "work" in this permission agreement. SEDL is pleased to grant permission for use of the work cited above by the Licensee, a graduate student at Brandman University in Vista, CA, who will distribute the work as part of a doctoral study and in her dissertation titled A Concerns-Based Approach to Professional Development for Integration of Technology to Support Implementation of Common Core State Standards. The following are the terms, conditions, and limitations governing this limited permission to reproduce the work:

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I'm e-mailing you a PDF of this agreement. Please print and sign one copy below, indicating that you understand and agree to comply with the above terms, conditions and limitations, and send the original back to me. If you wish to keep a copy with original signatures, please also print, sign, and return a second copy and, after I receive and sign it, I'll return it with both of our signatures to you.

Thank you, again, for your interest in using SEDL's Stages of Concern Questionnaire. If you have any questions, please contact me at 800-476-8581, ext. 6548 or 512-381-6548, or by e-mail at nancy.reynolds@sedl.org.

Sincerely,

Nancy Reynolds for SEDL

Date signed: June 20, 2014

Agreed and accepted:

Signature: Tami Boatright

Date signed: 6/20/14

Printed Name: Tami Boatright
Appendix E: Informed Consent

INFORMATION ABOUT: Planning for Integration of Technology for Common Core State Standards Implementation Based on Concerns

RESPONSIBLE RESEARCHER: Tami Boatright

PURPOSE OF STUDY: The purpose of this research study is to examine the differences in teachers’ levels of concern with integrating technology for implementation of CCSS according to age, gender, and years of teaching experience and how that information can serve as the basis of effective instructional models and pedagogical practices in professional development programs.

In participating in this study you agree to do the following:

- Participate in an online survey lasting approximately 15 minutes
- Answer five demographic questions about teaching status (full or part-time), content area of teaching, age, gender, and years of teaching experience.

I understand that:

- There are no possible risks associated with study participation.
- Compensation will not be provided for participation
- I may refuse to participate or withdraw from the survey at any time without any negative consequences.
- Any information that is obtained in this study will remain completely confidential. Study data will be analyzed as a whole and not by individual participant. If the study design or use of the data is to be changed, you will be so informed and consent re-obtained.
- My participation in this study indicates my agreement to participate. There is no need to sign and return this document to the researcher.

If you have any questions concerning this research, please contact me via email at boat2601@mail.brandman.edu or by phone at 559-352-1687. You may also contact my chairperson: Dr. Tamerin Capellino, capelin@brandman.edu.

I acknowledge that I have received a copy of this form and the Research Participant’s Bill of Rights.

I have read the above and understand it and hereby consent to the procedures set forth.