Elementary Principals' Perceptions of 21st Century Skills in Southeastern Virginia

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Abstract

The purpose of this study was to identify the perceptions of elementary school principals in Southeastern Virginia regarding implementation of 21st century skills. The Partnership for 21st Century Learning Skills framework was used as a foundation to identify the skills needed for the 21st century. In addition, the framework was used to examine elementary principal's perceptions of the most important and relevant 21st century skills to implement in elementary schools.

A mixed method study of elementary school principals in Southeastern Virginia Public Schools was conducted. Principals from school divisions in Southeastern Virginia were identified and asked to complete a survey. An online research survey was distributed to Virginia principals to determine their perceptions of implementing 21st century skills in elementary schools in Virginia. This study revealed that elementary principals perceived 21st century skills as being "very important" and "very relevant" in elementary schools; however the rate of embeddedness into the elementary curriculum was low. This study yielded valuable information regarding the perceptions of school leaders that might influence research, theory, practice, and professional development of elementary school principals as we move further into the 21st century and its associated challenges and demands.

Dedication

First and foremost, I would like to thank God for guiding my steps through this journey, without him, this would not be possible. Second, I would like to dedicate the completion of this monumental journey to my supporting family, friends, coworkers, and church family. To my husband, Jimmy, thank you for your continued support and willingness to support my dreams and educational goals. The support and efforts made during this journey will be cherished. You are a wonderful husband.

To my parents, Shirley and Carl McIntyre, I thank you for instilling in me the spirit to "dream big". To my mom, thank you for always being by my side. Always being there and helping me reach whatever goal I've selected. To my dad, thank you for encouraging me to seek higher education and for always lending a listening ear. You both have provided me with guidance and encouragement throughout this journey, thank you.

To my son, Jaymes, thank you for reminding me that "failure" is not an option. I hope that as you prepare for college you will remember the words that we've shared throughout this journey-failure is not an option. To my brother, Mike, thanks for your love and support. Your encouragement is most appreciated.

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Chapter 1
Introduction

According to Oretta, 21st century skills are the skills that students need to succeed in work, school and life (2012). "Today, *every* student, whether he/she plans to go directly into the workforce or on to a 4-year college or trade school, requires 21st century skills to succeed" (The Partnership for 21st Century Skills, 2007, p.1). The workplace, job, and skill demands are changing. Darling-Hammond (2010) states, the "new mission for schools is to prepare students to work in jobs that do not exist, creating ideas and solutions for products and problems that have not been identified, using technologies that have not been identified" (p.2). Wagner (2008a) states, "In today's highly competitive global 'knowledge economy' all students need new skills for college, career and citizenship" (p.xxi). Furthermore, Wagner (2008a) contends, "schools, haven't changed; the world has. And so our schools are not failing. Rather they are obsolete - even the ones that score the best on standardized test" (p.xxi).

To measure and compare student achievement internationally, the Programme for International Student Assessment (PISA) was officially launched in 1997 to assess performance in three-year intervals in mathematics, reading, and science. In the 2012 PISA administration in 34 countries, the United States ranked 27th in math (below average), 17th in reading (average) and 20th in science (average). Jack Buckley, commissioner at the National Center for Education Statistics states "Our scores are stagnant. We're not seeing any improvement for our 15-year-olds, our ranking is slipping because a lot of these other countries are improving". (Buckley, 2013, p.1). In College and Career Ready, Standards and Assessments, President Barack Obama (U.S. Department of Education, 2010) wrote,

> A generation ago, we led all nations in college completion but today, ten countries have passed us. It is not that their students are smarter than ours. It is that these countries are being smarter about how to educate their students. And the countries that out-educate us today will out-compete us tomorrow (p.1).

It is further echoed by National Education Association President Dennis Van Roekel:

> The 21st century isn't coming; it's already here. And our students have the opportunity and challenge of living and working in a diverse and rapidly changing world. Public

> schools must prepare our young people to understand and address global issues, and educators must re-examine their teaching strategies and curriculum so that all students can thrive in this global and interdependent society (National Education Association, 2010, p.1).

Key Agents for School Change are School Principals

Schools are trying to improve teaching and learning in efforts to improve student achievement. Teaching and learning improvement initiatives vary in type and scope; however, one consistent factor in initiative success is the role of the school leader. Leithwood (2004) stated, "It turns out that leadership not only matters: it is second only to teaching among school-related factors in its impact on student learning" (p.5).

Although the principal's role is instrumental to the change process, it is not in isolation. Principals and teachers have to work closely with central office to make reform work successfully. According to Leithwood (2004), "The chance of any reform improving student learning is remote unless district and school leaders agree with its purposes and appreciate what is required to make it work" (p.4). Preparing our students for the 21st century and beyond will take all stakeholders, to include parents and our community. School leaders will lead this initiative.

School leaders should turn their focus to critical questions regarding how to create environments that engage students and how to prepare students for the global job market? The enormous changes in the economy and society make it imperative for the nation to be much more strategic and effective in preparing students to succeed in this new era of globalization (Friedman, 2005). As educational leaders, it is becoming increasingly evident that we need to prepare our schools to adapt in response to the changing world. Assessing the current perceptions of in-service principals will aid in developing an informed path forward.

Overview of the Study

The purpose of this study was to identify the perceptions of elementary school principals in Southeastern Virginia regarding implementation of 21st century skills. Surveys were administered to elementary principals in school divisions in the Southeastern region of Virginia. Descriptive statistics were employed to look for patterns in quantitative ratings, and qualitative

analysis aided the researcher in discovering emerging themes in open-ended participant responses.

Historical Perspective

There are several events in our nation's history that have set the tone for a new way of educating students, including the launch of Sputnik, the release of *A Nation at Risk*, A Nation Accountable, No Child Left Behind, accountability movement, and the unveiling of Common Core Standards. Historical events will be discussed to outline the events leading up to the need for 21st century skills.

Sputnik, the world's first artificial satellite was launched on October 4, 1957 by the Soviet Union. This was a shock to U.S. officials. The United States planned to be the first to make that contribution to science. This event caused alarm throughout many institutions in society. In the military, the cold war was intensified and the arms race was heightened (U.S. Department of State Office of Historian, n/d). In education, concerns about math and science were stressed according to Fritzberg (2012), A Brief History of Education Reform, and The Federal Government's Effort to Improve Our Schools. Americans were concerned about both mathematics and science skills for high school and college students. In addition, he stated, "federal resources were directed toward producing more rigorous curriculum and better serving gifted students who would bring ideas to help their country thrive" (p.1).

Since the findings of *A Nation At Risk* (The National Commission on Excellence in Education, 1983) and the follow-up study a Nation Still at Risk (U.S. Department of Education, 2008) the perception of our nation's education system has changed greatly. The pivotal documents reported that other countries were becoming more competitive in areas such as economics, politics, and technology and struggling student achievement was a concern. A Nation Still at Risk confirmed that these concerns continue to be an issue.

As a result of the A Nation at Risk (1983), A Nation Accountable, Twenty-five Years After A Nation at Risk (2008) was released. This report reviewed the progress made since the release of A Nation at Risk. The findings indicate that we are more accountable and aware of our strengths and weaknesses as a nation. Furthermore, this report indicated that total spending per pupil in 1983 to 2008 had increased from 118.4 billion dollars to 499 billion dollars in 2005. School districts and states were more aware of the academic concerns and had begun to make

changes as these relate to teaching and leadership. As a result of a Nation at Risk (2008), at the state level there was a focus on content standards, annual tests, reporting and analyzing data. At the federal level, during Clinton's presidency, Congress passed the Improving American's School Act of 1994, which required state academic content standards and tests, and the Goals 2000: Educate America Act (1994), which provided federal funds to aid states in this task. In 2002 this level of accountability was heightened with the No Child Left Behind Act (NCLB) of 2001 (U.S. Department of Education, 2008). The No Child Left Behind Act of 2001 was considered reform at the federal level. It required states to measure and report on results in terms of standards and accountability.

Despite the controversy of NCLB, it enabled the public to see the performance of each school district, each school, and each student. "We must transform ourselves from a nation at risk of complaining to a nation that is accountable and at work on its educational weaknesses" (U.S. Department of Education, 2008, p.8). Changes to the education system require the analysis of available data that indicate how prepared students are for their future.

In a Nation Accountable (2008), it is indicated that there are new factors that did not exist in 1983, when a Nation at Risk was released, such as the increase in technology in our society and how it impacts our schools. The change in our global economy poses an enormous challenge for students and it is imperative that we stay informed of our progress and recognizes the urgency of preparing our students for the future (U.S. Department of Education, 2008). More importantly, it is critical to the future of our students that we embrace and teach skills that will prepare students for the 21st century and beyond.

After No Child Left Behind was introduced, the Common Core Standards were introduced. The Common Core, according to the Council of Chief State School Officers (CCSSO) defines it as a set of high quality academic standards in mathematics and English language arts/literacy (LLA). These standards have been adopted across forty-four states, District of Columbia, the Department of Defense Activity the DODEA and four territories. The goal of the standards is to ensure that all students regardless of location, graduate from high school with the knowledge and skills necessary for college and the workforce (Common Core State Standards Initiative, 2010).

The college and workforce skills require students to use critical thinking, higher level questioning, analytical and problem solving skills. In mathematics, standards call for real-world

problem solving and communication of ideas. The Common Core standards appear to be aligned with the needs of 21st century learners. The Partnership for 21st Century Learning Skills (P21) indicates that the Common Core does not align exactly; however, critical thinking, communication and collaboration skills are aligned (Partnership for 21st Century Learning Skills, 2011b).

The Emergence of 21st Century Skill Frameworks

The development of 21st century skill frameworks began to take shape concurrent with other historical changes in professional organizations, consortia, and private-sector foundations. One prominent framework was developed by The Partnership for 21st Century Skills, an organization founded in 2002, that has since become a leading organization advocating for the implementation and integration of 21st century skills as a critical component for the success of the education in the United States (Partnerships for 21st Century Skills, 2011a). The organization promotes collaboration, critical thinking, problem solving and communication as essential skills for success in the 21st Century, and presently, 19 states have adopted their framework (Partnership for 21st Century Skills, 2011a). This P21 framework, as it's called, served as the theoretical framework for this study.

Education has experienced a great deal of change in recent decades. There have been a variety of reforms, initiatives and mandates that impact the way we educate our students. A focus on implementing 21st century skills for students is paramount to preparing students for the future, as it is a response to changes that are occurring right before our eyes. Education needs to focus not only on conveying knowledge, but also on developing essential skills: critical thinking, collaboration, and communication, and creativity.

Virginia perspective.

While Virginia is not one of the 19 states having formally adopted the P21 framework, there is evidence that leadership is aware of the need to shift practices to integrate 21st century skills. The 2012-2017 Comprehensive Plan developed by the Virginia Board of Education hints at an awareness of the importance of 21st century skills through the inclusion of questions such as, "Will Virginia students be ready? Will they be equipped with the skills they need to be successful in the global economy?" (p.11). Additionally, the plan articulates, "The reality is that

our economic future depends on the graduates of today. A public education system that prepares students to be capable, responsible, and self-reliant citizens in the global society is no longer an aspiration, but it is a necessity" (VA Department of Education, 2013, p.12).

Statement of the Problem

With a changing society before us, it has become increasingly more evident that the 21st century learner is much different than students of previous generations (Oretta, 2012). They have information at their fingertips and technological skills that are far better than many adults. Educators today are challenged with implementing 21st century skills to prepare these students for the future. We no longer live in a time where it is an option to teach 21st century skills. It is now critical. All students must be prepared with the necessary skill to be successful in a changing undefined global economy.

Principals will be charged with implementing the leadership needed to drive our schools into the 21st Century (Connelly 2009). With the competing priorities for time and resources as well as the growing demands of the principalship, it is becoming increasingly difficult to determine if 21st century skills will be given the attention they deserve. High stakes testing, accountability and standards based learning continue to be the driving forces that impact many decisions for educators. Determining how to include 21st century skills in the context of the heavy responsibilities on schools and school leaders will be a challenge.

It is clear that perceptions of principals, given their critical roles in school will impact actions or inactions of schools across the nation and potentially bring about change or leave us unprepared for the future. However, it is unclear as to what principals perceive are the best practices to successfully implement effective strategies to promote 21st century skills. In an effort to understand principal's perceptions of 21st century skills, this study will survey principals in Southeastern Virginia to determine perceptions on implementation of 21st century skills.

Significance of the Study

Given principals' expanded roles as instructional leaders in an era of accountability, the perceptions of principals would likely be a strong influence on the instructional practices of their faculties. This study will yield valuable information regarding the mindset of school leaders that

might influence research, theory, practice, and professional development of elementary school principals as we move further into the 21st Century and its associated challenges and demands.

Purpose of the Study

The purpose of this study was to identify the perceptions of elementary school principals in Virginia regarding the implementation of 21st century skills. While there are many organizations external to the public school system promoting 21st Century Learning Skills, research literature is just beginning to emerge on the perceptions of school leaders in relationship to these defined skills. Since perceptions influence actions, and school leaders exercise an influence on the content and processes used to educate students in their charge; there is a need to understand how elementary principals perceive 21st century skills. Leithwood, Louis, Anderson, and Wahlstrom (2004) state, "Leadership is second only to classroom instruction among all school-related factors that contribute to what students learn at school" (p. 5). As a result, understanding the leadership perspective on 21st century skill implementation should give the researcher insight into a key factor contributing to elementary students' learning in this region.

Presently, there is little information on the perceptions of elementary principals regarding which skills are important and how they support teachers who implement these skills within their schools. There is a need to understand how elementary principals are meeting the demands of 21st century learning as a means of assessing initial implementation and charting a course for continuous improvement.

Additionally, most studies conducted in educational leadership on this topic focus on the role of secondary principals in relationship to 21st century learning; leaving a vacuum in the body of knowledge regarding 21st century skills and the perceptions of elementary level leaders. Regardless of school level, there is also minimal research on the impact of principal leadership on the implementation of 21st century skills, despite the centrality of principal leadership in many 21st Century Skills frameworks. This study will contribute to the body of knowledge by assessing elementary principals' perceptions of 21st century skill implementation, which will hopefully build a foundation for future studies on avenues for promoting 21st century learning skills in our schools.

Research Questions

The following research questions will be used as the basis for inquiry:

1. What are the perceptions of elementary principals in Virginia regarding the importance and relevance of 21st century skills as identified in the P21 framework?
2. To what degree are these skills embedded into teaching and learning practices in schools?
3. What challenges do principals perceive with regards to successful implementation of these 21st century skills?

Conceptual Framework

The Partnerships for 21st Century Skills (P21) has created a framework (see Appendix A) that describes what is needed for students to succeed in a global economy (Partnership for 21st Century Skills, 2011a). The framework identifies core subjects and 21st Century themes as being necessary for student success in the 21st Century. The framework describes and identifies the skills and knowledge needed for students to succeed. The skills are divided into themes. The themes are as follows: Learning and Innovative Skills, Information and Media Technology Skills, and Life and Career Skills. The Learning and Innovative Skills will be the focus of this study. It is the Learning and Innovative Skills that, when combined with the context of the core knowledge instruction or the curriculum, will prepare students for the 21st century. The framework further states that there must be a "blend of content knowledge and specific skills" (p.1). Students must master the core academic subject matter such as reading, mathematics, science and social studies. However, within the core content students must also learn the essential skills: critical thinking, problem solving, communication and collaboration. When the framework is united with the appropriate support; "standards, assessments, curriculum and instruction, professional development and learning environments" (P.1), students are better prepared for work and life in the 21st century. (Partnership for 21s Century Skills, 2011a).

Definitions of Terms

According to the Partnership for 21st Century Skills (2009a), the elements described in the framework are the knowledge, skills and expertise students should master to be successful in work and life in the 21st Century.

21st Century Skills – Critical thinking and problem solving; collaboration across networks and leading by influence, agility, and adaptability, innovation and entrepreneurialism; effective oral and written communication skills; accessing and analyzing information; and curiosity and imagination (Wagner, 2008a).

Curriculum – For the purpose of this study, the word "curriculum" refers to the written curriculum.

Globalization – The shrinking of the world due to an increase of human interaction that adds to the spread and influence of human impacts and results in greater interdependency (Smith and Justin, 2008).

Program for International Student Assessment (PISA) – A system of International Assessments that measures the performance of 15-year-olds in reading literacy, mathematics literacy, and science literacy every three years (OECD, 2014)

Limitations

There were conditions over which the researcher had no control. Limitations of the study include the following:

1. Participants may or may not be willing to answer honestly.
2. Participating principals may or may not have an accurate perception of the instruction-taking place in their building. Their role as instructional leader is assumed.
3. Electronic communication and survey requests may be returned as undeliverable.
4. Due to the demands of the principalship, principals may elect not to participate.
5. Participants may lack knowledge of 21st Century Skills.

Delimitations

The study consisted of some conditions for which the researcher did control. The delimitations of the study include the following:

1. Only select public school divisions in the Commonwealth of Virginia were considered for participation, limiting generalizability to other contexts.

2. In analyzing the Partnership for 21st Century Learning Framework only the Learning and Innovative Skills part of the framework was included in the survey for elementary principals. The Learning and Innovative Skills provided a clear connection to the skills needed in 21st century; however the technology and life skills connections are not discussed with elementary principals.
3. Only K-5 schools were included, limiting generalizability to secondary contexts.
4. Only elementary principals were considered for participation, excluding elementary assistant principals and secondary assistant principals and principals.

Organization of the Study

This study is organized into five chapters. Chapter 1 gives an introduction and overview of the problem relating to implementing 21st century skills, the historical context, the frameworks for inquiry, and the research questions. Chapter 2 provides a review of relevant literature, and Chapter 3 describes the proposed methodology. Chapter 4 reports the data and Chapter 5 reports findings, implications, and ideas for future studies.

Chapter 2
Literature Review

Purpose of Literature Review

The purpose of this literature review is to provide information from current research regarding the changing world and the global economy, the need for 21st century skills, the value these skills will add to society and the workforce, the current initiatives in Virginia and the role of the principal in implementing these skills, is discussed. Themes in each of these relevant areas are explored.

Search

To gather scholarly research, a detailed search of the literature pertaining to perceptions of elementary principals and the implementation of 21st century skills, was conducted. Various search strategies were utilized. For the purpose of this study, the online database search was the primary method used for identifying scholarly research literature. The Virginia Polytechnic Institute and State University library Summons search engine yielded approximately 51,841 results, when using the terms "implementation of 21st century skills in elementary schools" and "principal perceptions." That number was significantly reduced to 24,070 refining the search and setting parameters for articles published in or after the year 2005. The search terms were refined to include "school administrator" the outcome was reduced to 9,179. When the terms "education" and "educational leadership" were added, there were 1,206 results. Search terms were further changed to include school administrators and leadership. The search outcomes were reduced to 179 dissertations and journal articles. Reviewing relevant titles, bibliographies, and scholarly journals further narrowed the search. In addition, works cited by other researchers were carefully examined for inclusion in this literature review. Some items were included from other literature review sections, which resulted in the inclusion of items prior to 2005. There were approximately 200 items reviewed and sixty-four items included in the Reference section of this study.

Changing World and Global Economy

The changes being experienced at this point in history are unprecedented, and an emerging body of literature addresses the impact of change forces on the economy, and in turn, education. According to Linda Darling-Hammond, (2010), "the 21st century is characterized by the availability of abundant information, advanced technology, a rapidly changing society, greater conveniences in daily lives, and keener international competition" (p.1). Friedman wrote extensively about the changes occurring in the 21st century in his book, *The World is Flat, A Brief History of the 21st Century.* Friedman characterized changes as "flattening" forces that create greater interconnectivity with people and places with whom we had limited or no dealing with in the past. Friedman (2007) theorized that this flattening trend has occurred primarily because of the advancement in technology, and in turn, this improved technology has led to broad availability of information.

The rise of a global economy has changed the way we define expectations for citizenship and expectations for the workforce, as well as how we communicate and live (Darling-Hammond, 2010; Friedman, 2007; Wagner, 2008a). As a result of flattening forces, markets have been redefined, creating competition on a global scale, instead of just within communities, states, and countries. The availability of cheaper labor and overhead costs has led to outsourcing, a phenomenon that underscores how the structure of companies and their communication and use of information is changing in a way that has implications for education.

Pink has written about the changing approaches of business in the 21st century context, as well as sources of motivation for workers, and the skills necessary for American competitiveness. Pink (2009) shared that the operating system for businesses will revolve around three elements: autonomy, mastery and purpose. "*Autonomy* as described by Pink (2009) is the urge to direct our lives. *Mastery* is the desire to get better and better at something that matters. *Purpose:* the yearning to do what we do in the service of something larger than ourselves" (Pink, 2009). To strive in organizations that allow this type of work environment, companies will be dependent upon workers who have initiative and who are self-starters. Workers who are problem solvers; able to tackle any problem they encounter, creative: great communicators to bargain, trade and discuss what is needed to complete the task; and collaboration will be a necessity in this environment. Pink also expressed a shift in the type of work that will be key to American success in his book *A Whole New Mind (2005).* In this book Pink indicated that right-

minded thinkers will dominate the workplaces of tomorrow. People who tend to use the right side of their brain usually operate from a more creative mindset. These people are usually artist, creators, storytellers, and big picture thinkers. They will be more successful than left-minded thinkers, lawyers and doctors. Pink shared that this change in workforce demand is the result of the Conceptual Age. The Conceptual age is an era in time when our economy will require skilled workers who are directed by the right side of their brain.

The Need for 21st Century Skills

Our world is changing at an incredible rate, specifically with regards to technology and information, and there is a need to prepare our students with skills necessary to effectively compete in a flattening, global society (Darling-Hammond, 2010; Friedman 2007; Pink, 2009; Wagner 2008a). Adapting to changing times will be critical to our competitiveness, and the workforce pipeline begins in public education. According to Moore (2009), we no longer have the option to teach 21st century skills, as it is a new imperative. If we are to compete in a global economy our approach to educating our citizens must change to align with expectations for citizenship and the workforce (Darling-Hammond 2010; Friedman, 2007; Wagner 2008a).

As it stands now, our education system is not built for 21st century learning. In Darling-Hammond's book, *The Flat World and Education, How America's Commitment to Equity will Determine our Future*, she argued "the core problem is that our education and training system were built for another era, an era in which most workers needed a rudimentary education" (Darling-Hammond, 2010, p.1). As manufacturing jobs have become automated or moved oversees, the entire structure of the United States economy has drastically changed. In 1967, more than half (54%) of the country's structural output was in the production of material goods and delivery of material services such as transportation, construction and retail. In 1997, nearly two-thirds (63%) was in the production of information products such as computers, books, televisions and software. Information services grew from about one-third to more than half of the economy from 1965-2005. (Hammond, 2005). Furthermore, the information age continues to dominate this century by expanding at a very quick rate. From 1999-2002, the amount of new information produced nearly equaled the amount produced in the entire history of the world previously (Lyman and Hal, 2003).

According to Darling-Hammond (2010), "Our education system must be based on a system of teaching and learning" (p. 26). In this system educators will receive support and preparation for the challenges of their daily work. In addition, support systems such as the standards, the curriculum, and the assessments will be aligned with the skills and the needs of the 21st century learners. In addition skills that promote thinking, creativity, and the ability to problem solve (Friedman 2007, Wagner 2008a, Darling-Hammond, 2010) will be a part of the learning process.

Wagner, in his book entitled, *In the Global Achievement Gap: Why Even Our Best Schools Don't Teach the New Skills our Children Need and What We Can Do About It,* argues that a rapidly changing society will require a change in instructional practices (2008). In today's classrooms students need to be provided with relevant instruction rich in the skills that will be needed for their futures. Wagner (2008a) referred to the "Seven Survival Skills for the 21st Century", (p.14) as a new curriculum necessary to prepare all students to work and be citizens in the 21st century. They include:

1. Critical thinking and problem solving
2. Collaboration across networks and leading by influence
3. Agility and adaptability
4. Initiative and entrepreneurialism
5. Effective oral and written communication
6. Accessing and analyzing information
7. Curiosity and imagination

Additionally, relevant instruction should be characterized by a shift from instructing for memorization and recall to instructing the skills needed for work, life, and citizenship in the 21st century (Friedman, 2007; Wagner 2008a, 2008b; Schmoker, 2008).

Larson and Miller (2011) indicate that 21st century skills should be taught in the context of the current curriculum. Students should be given the opportunity for authentic learning experiences. Skills like communication and collaboration, and innovative thinking and problem solving should be embedded into the curriculum.

As our society continues to expand, it is imperative that school systems in the United States begin to embrace challenges and prepare our students for what is to come. Other nations

have acknowledged the changes and have begun to make changes in how they educate their citizenry (Darling-Hammond, 2010).

Global competitiveness. Nations such as Finland, South Korea and Singapore have made significant changes in their education system to effectively educate more and more of their citizens (Darling-Hammond, 2010). Darling- Hammond (2010) states that "other nations are expanding educational access to more and more of their people, and they are revising curriculum, instruction, and assessment to support the more complex knowledge and skills needed in the 21st century" (p.5). In the United States, this does not appear to be the direction of our school systems, as "The United States is standing still while more-focused nations move rapidly ahead" (Darling-Hammond, p.9).

As previously discussed, The Organization for Economic Cooperation and Development (OECD) developed the Programme for International Student Assessment (PISA) to measure and compare student achievement internationally. This assessment is administered on a triennial basis to a large sample of students aged 15 to 16, and in the 2012 PISA administration in 34 countries, the United States ranked 27th in math (below average), 17th in reading (average) and 20th in science (average) (OECD, 2014).

The United States must shift course if it is to survive and prosper as a First World Nation in the 21st century. We cannot afford to maintain the structural inequalities in access to knowledge and resources that produce persistent and profound barriers to educational opportunity for a large number of our citizens (Hammond, 2005). "There is no doubt that the long-term survival and success of individuals and societies increasingly depend on a top-flight education system" (Darling-Hammond, p.24).

In summary, our nation is changing (Friedman 2007, Wagner 2008a, Darling-Hammond, 2010). The way we educate our students must be aligned with the way we define expectations for citizenship and the workforce (Friedman 2007; Wagner 2008a). Our education system must embrace strategies and skills that will promote thinking, creativity, and the ability to problem solve. In addition, instruction should embrace an increase in rigor (Wagner, 2008a) The flattening of our society has made it imperative to teach our students how to compete in a global economy (Darling-Hammond, 2010; Friedman 2007; Wagner 2008a). Our students must possess the skills needed to be effective in the workplace and beyond. As stated by Moore (2009), we no

longer have the option to teach 21st century skills. If we are to compete in a global economy our approach to educating our citizens must change (Darling-Hammond 2010; Wagner 2008a).

Development of 21st Century Skill Frameworks

Organizations and authors have tackled the challenge of conceptualizing and crystallizing 21st century skills into formal frameworks, and three prominent frameworks will be addressed in this literature review: Metiri, P21 and Tony Wagner's Seven Survival Skills.

Metiri. The Metiri Group has proclaimed that all children are entitled to an educational experience that prepares them to thrive in a digital, knowledge-based society (Metiri Group, 2013). The framework was created by the Metiri Group and McRel Laboratories (Lemke, Coughlin, Thadani & Martin, 2003). The framework was created based on two years of research that resulted in the creation of the EnGauge 21st Century Skills Framework. It is centered around skills that, when aligned with rigorous standards, provides a foundation for the public, businesses, and educators to determine what is needed for workers in the Digital Age (Lemke, et al., 2003). The EnGauge framework differs from the Partnership for 21st Century Skills in that according to Lemke (2003), literature reviews, research on the Net-Generation, and a review of new trends in the workforce were used to create the framework. In addition, the EnGauge Framework includes the use of technology throughout the framework. It is a vehicle for learning.

EnGauge. The EnGauge 21st Century Skills Framework graphic presentation of the four broad areas of focus is presented in a four square presentation. Digital Age Literacy means to have those basic skills required to function in society. Historically these skills have included, reading, writing, and listening and basic computation. Those skills will continue to be the foundation for what students must be able to do; however students must also show proficiency in science, technology and cultures. Furthermore, students must be able to use media to communicate information and knowledge about any of those areas. The students of the 21st Century must be able to use "digital technology, communications tools, and/or networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge society" (International ICT Literacy Panel, 2002, p. 2). Inventive thinking is comprised of being able to successfully manage various life skills such as; adaptability and managing complexity, self-direction, risk-taking, curiosity, creativity and sound reasoning. The third element, is

communication. The EnGauge model identifies communication as being extremely important. Students will be required to communicate effectively in all areas that impact their social, personal, professional and civic lives (Lemke, 2003). Teaming and collaborative skills, interpersonal skills, social and civic skills will all be extremely important for students who will eventually be citizens in the workplace. The fourth element is high productivity. This cluster includes skills that will determine a student's success in the workplace. Students will need to be successful in prioritizing, using real-world tools, and the ability to produce high quality products (Lemke, et al, 2003).

P21. The Partnership for 21st Century Skills (P21) was founded in 2002 to promote 21st century skills as an essential part of K-12 education. It was established as a coalition to unite business and community members, education leaders and various policymakers, and among its founding members were the U.S. Department of Education, Apple, Microsoft, and the National Education Association. Subsequent partners include the National Board for Professional Teaching Standards, Ford Motor Company, Walt Disney, and PBS (Partnership for 21st Century Skills, 2011b). According to the P21 website, their framework has been formally adopted in 19 states, including California, Arizona, Maine, and North Carolina. The Partnership for 21st Century Learning Skills promotes collaboration, critical thinking, problem solving and communication as the essential skills for success in the 21st Century. (Partnership for 21st Century Skills, 2011a). This framework will serve as the framework for this paper.

While the identification of skills is important, P21 has more of a focus on student outcomes. The Partnership for 21st Century Skills (2009a) defines *21st Century Student Outcome*s as "the knowledge, skills and expertise students should master to succeed in work and life in the 21st Century" (Chambers, 2011, p.2). These outcomes are represented in the graphic as arches on the rainbow. At the base of the graphic, the 21st Century Learning Support System is displayed as pools on the bottom. The Learning Support Systems are critical systems to assure mastery of 21st Century Skills (Partnership for 21st Century Skills, 2009a). *See Appendix A.*

While the graphic displays two different aspects, student outcomes and support system, it is the blending of the two aspects that defines this framework. Students must have mastery of the core subjects, learning and innovative skills, information and technology, and life and career skills. The Learning Support Systems must be aligned to assure mastery of the essential 21st Century Student Outcomes (Partnership for 21st Century Skills, 2011a). "Students who can think

critically and communicate effectively must build on a base of core academic subject knowledge. All 21st century skills must be taught in the context of core academic subjects" (Partnership for 21st Century Skills, 2009b, p.1).

Justification of P21. The Partnership for 21st Century learning (2011a) has worked collaboratively with various business organizations and educational entities to determine the specific needs of businesses and students to be successful in the 21st century. More importantly those outcomes are based on the success of an integrated approach. Students are responsible for mastering the core content areas; English, World Languages, Mathematics, Science, and Social Studies, Geography, Government and Civics. Life and Career Skills, Learning and Innovative Skills, and Information, Media and Technology Skills are integrated into the core content. The implementation procedures have been organized and tested and adopted in over nineteen states. This approach will be extremely effective for practitioners integrating skills into the teaching and learning curriculum throughout Virginia. Since the Virginia Department of Education has increased the rigor in the Standards of Learning in core content areas, it could be applicable to align the Learning and Innovative Skills to the new standards. This alignment would assure the students of Virginia are ready for the 21st Century. This alignment

Wagner. Wagner (2008a) indicated that despite various reforms public schools are struggling to prepare students for the 21st century. Wagner stated, "In today's highly competitive global "knowledge economy" all students need new skills for college, careers and citizenship" (p.xxi). If our schools do not provide these skills for the students, the results will be a global achievement gap. Wagner's theory is a call to action for educators and policy makers to make changes in American schools. Wagner (2008a) indicated that students must possess seven survival skills to be ready for the demands of the 21st century. The seven survival skills are critical thinking and problem solving, collaboration across networks and leading by influence, agility and adaptability, initiative and entrepreneurship, effective oral and written communication, accessing and analyzing information, and curiosity and imagination.

The first set of skills, critical thinking and problem solving is defined as being able to think through a process, to ask questions and problem solve. These skills will be extremely important in the work force and as life-skills. Second, Wagner (2008a) identified, collaboration across networks, and leading by influence, as the ability to work with people across boundaries and countries has become important. Workers must be able to motivate and influence others

and work together. Third, Wagner (2008a) identified agility and adaptability as the ability to change, to be flexible. The classrooms are changing and so is the work force. Workers and students must become comfortable with the ongoing changes. Fourth, Wagner (2008a) identified, Initiative and Entrepreneurialism, is defined as an individual having leadership ability and taking risk as a leader. Fifth, Wagner (2008a) identified effective oral and written communication is defined as being able to effectively write and speak to others. Sixth, Wagner (2008a) identified Accessing and Analyzing Information, it is defined as the ability to critically evaluate information and discern what is important for the task. The seventh skill Wagner (2008a) identified is curiosity and imagination. Workers must be able to think critically, but they must also have the ability to wander about the what if's, and have an imagination about the unknown. Wagner (2008a) contended that all seven skills are valuable skills for the 21st century.

Framework commonalities. There are common attributes within the three frameworks. First, each framework identifies life and career skills needed to navigate in knowledge-based economy. Second, each framework identifies the need to close the global achievement gap. Third, students must be able to effectively use their ability to think, create, and use technology to communicate with others. Lastly, another common attribute is that all models indicate that 21st century skills or soft skills, go beyond what is measured through traditional assessment (Chambers, 2011).

In conclusion, researchers, (Lemke, et. al. 2003, Partnership for 21st Century Skills 2009a, Wagner 2008a) have identified valuable skills needed for the twenty-first century. Each of the three models emphasizes the value of the skills as it relates to work and life-skills (Chambers, 2011). The Partnership for 21st Century Learning identified a framework that prepares educators with the knowledge and steps to implement a plan to improve the school's curriculum. Currently there are nineteen states that are considered as Partner States (Partnership for 21st Century Skills, 2011b). The Metiri Group also has a framework that creates a foundation for educators, businesses, and the public to begin dialogue about the best practices to assure these skills are implemented in our classrooms because they will be the exception of workers and citizens of the 21st Century. Wagner (2008a) has identified seven survival skills for the 21st century. The literature is clear that there is value in implementing 21st Century Skills and preparing our students for the 21st century.

Current efforts. The Virginia Department of Education (2012) is committed to setting high standards for the students of Virginia. The Board of Education has developed the Board of Education: Comprehensive Plan 2012-2017, 2012. Two of the seven goals set forth in the Comprehensive Plan are aligned with promoting and preparing students for the

21st Century. Goal two from the comprehensive plan is significant to the 21st century research.

Goal 2- Rigorous Standards for Promoting College and Career Readiness. The Board of Education will increase standards to ensure global competitiveness. Virginia schools will lead the nation in rigor and quality. Building on the Virginia Standards of Learning program, "more rigorous and relevant expectations will continue to be implemented that meet or exceed national and international benchmarks for college and career readiness" (p.3).

Goal 3 - Expanded Opportunities to Learn. The BOE will implement policies to expand learning options for students. Opportunities like online learning and continued use of technology is an opportunity for Virginia students to utilize 21st century skills.

On the local level, some school divisions in the Commonwealth of Virginia have begun the work to create school divisions that have embraced the challenge to provide students with the relevant skills needed for the 21st century, as evidenced by a review of their websites and strategic plans. Virginia Beach Public Schools has created Compass to 2015, a strategic plan that focuses on teaching and assessing skills that students need to thrive as 21st century learners (Virginia Beach Public Schools, 2012). Chesterfield County Public Schools has embraced the Meriti framework. They have created the Chesterfield County Public Schools Division of Instructional Framework for 21st Century Teaching and Learning. The vision statement, states, "Chesterfield County Public Schools will provide an engaging and relevant education that prepares every student to adapt and thrive in a rapidly changing world." (Chesterfield Public Schools, 2011). The focus on student outcomes that promote 21st Century career and citizen readiness appears to be a clearly articulated in Chesterfield County Public Schools. Alexandria Public Schools has embraced the Partnership for 21st Century Learning framework, choosing to focus on blending student outcomes with the necessary support systems to promote student for the 21st Century (Alexandria Public Schools, 2014).

The need to prepare our students for the 21st Century continues to be a critical issue for public schools in Virginia and across this nation. As school leaders begin to take on the

initiatives of implementing 21st century skills, principals are the key to successful implementation.

The Principal as Instructional Leader

As cited by Hunley-Stukes (2014), the Southern Regional Education Board (SREB) indicated, "just a few years ago, school principals were expected to be administrators. Today, that focus has shifted…to school leaders creating cultures of success, working closely with teachers, and aggressively leading improvement in curriculum, instruction and academic performance" (SREB, 2011, p.1). Mendels (2012) contended that a major reason for the attention being paid to principals as instructional leaders is due to the empirical link between school leadership and student achievement. Principals are expected to spend time in classrooms evaluating teachers and providing feedback, or assuring that someone who is qualified in the core area is assigned to complete that task (Mendels, 2012). "Effective leaders focus laser-like on the quality of instruction in their schools"(p.56). In providing this level of monitoring and feedback, student achievement should result in positive student achievement. Principals are expected to reveal favorable results in student achievement, be knowledgeable about academic content and recent pedagogy and work with teachers to improve instruction (Shoemaker, 2010). The principalship of the 21st century will require a number of solid leadership skills, but in addition, tomorrow's principals will be required to be focused visionaries who stand strong for important ideas and core values (Ferrandino, 2001). In the article, *Awesome Power of the Principal* (2010) by Fullan, he contended that research identifies the characteristics of an instructional leader, but it is very difficult to measure those characteristics to determine which are the most effective. More importantly, we should look at the impact of the principal over change. He stated, "The key to the quality of change is embedded in the power of the principal helping to lead organizations and systems transformations", p (10) If initiatives to introduce and implement 21st century skills are to be successful in our schools, principals will play a pivotal role.

Principals as Change Agents

According to Chambers (2011), the principal is seen as a collaborative instructional leader charged with addressing the educational needs of the 21st century. Principals must be

instructional leaders who are focused on curriculum that has a balance of skills as well developing 21st Century Skills. Connelly (2009) continues, "we know that it is the principal who empowers the teacher, encourages the student, and involves the community in ways that have a lasting impact" (p.1).

However, Fullan (2010) stated that this change agent must also be skilled in other areas as well. Fullan contended that the principal must know the "skinny of change" (p.12). That person must be able to do a small number of very important skills consistently and accurately. Skills such as building relationships with teachers, seizing opportunities to communicate and stay the course when problems arise are among those skills that must be done accurately. Celebrating successes, capacity-building; teachers and students articulate learning intentions, success criteria and instructional actions, providing opportunities for teachers to model lesson in their peers classroom, which is job embedded professional development.

Principals will lead the initiatives with their teachers and staff to deliver the expected results. As school divisions begin to implement a more rigorous curriculum to meet the demands of the 21st century, principal will embrace the challenges to monitor instruction, assure student achievement and drive the new initiatives, "It is the principal who brings it all together, providing the management and instructional leadership to trigger the improvement we seek" (Connelly, 2009, p.1). However, principals will need a knowledge base to support 21st century education. "Principals take their responsibility for student achievement seriously, and they are continually learning, gaining the knowledge and skills to lead 21st century schools and deliver on 21st century learning expectations" (Connelly, 2009, p.1).

Summary

Our society has sustained a remarkable change, which has significant implications in the way we utilize information. Students can access, share and communicate information in ways never thought of prior to the beginning of the information age. These changes impact the way we live and work. Research has shown that our schools have not kept pace with the technological advances of the last ten years (Oretta, 2012). We no longer have the option to decide if we are going to teach 21st century skills, as the time has arrived that we must engage and immerse our students in skills that will prepare them for the 21st century and beyond (Moore, 2009).

To prepare students for the 21st century and promote successful participation in a global economy, our schools will have to make a change in the way they prepare students. Our educational system must embrace strategies and skills that promote thinking, creativity, and the ability to problem solve (Darling-Hammond, 2010; Friedman 2007; Wagner 2008a). There will need to be a shift from teaching memorization and recall to an emphasis on skills that will prepare our students for work, life, and citizenship in the 21st century (Friedman, 2007; Schmoker, 2008; Wagner 2008a, 2008b). Wagner (2008a) indicates that there is a need for a new curriculum with an emphasis on seven survival skills. The Partnership for 21st Century Skills indicates the core content areas should be stressed integration of the 4C's into the curriculum: critical thinking, collaboration, creativity, and communication.

The success of the reform of this magnitude will require strong leadership at the building level. Research indicates that "school leaders are responsible for creating cultures of success, working closely with teachers, and aggressively leading improvement in curriculum, instruction and academic performance" p.1 (Southern Region Education Board, 2011). Principals of the 21st century will be critical to the success of motivating and inspiring teachers to change the way they educate children.

No known research has been conducted on the perceptions of elementary principals with regards to the implementation of 21st century skills. This study will examine perceptions of elementary principals in Virginia regarding 21st century skills, evaluate their importance for teaching and learning, and the challenges associated implementation in kindergarten through fifth grade.

Chapter 3
Methodology

Purpose of the Study

The purpose of this study was to identify the perceptions of elementary school principals in Virginia regarding implementation of 21st century skills. This chapter explains the methodology used to conduct the research for this study. The research design and methodology of the study, population and sample, data collection procedures and instrument design are shared.

Research Design/Methodology

This mixed method study was conducted through the form of a survey, so as to quantify and capture the perceptions of elementary principals through the use of rating scales. Open-ended free response questions were included to qualitatively obtain information regarding challenges associated with implementing 21st century skills. This methodology allowed the researcher to establish a baseline assessment of principals' perceptions, which could inform future school leadership and policy decisions in regards to the incorporation of 21st century skills in instructional programming.

Research Design Justification

This study used a mixed method design. Creswell (2009) indicated that this is a research approach that combines or associates both qualitative and quantitative forms of research. McMillan and Wergin (2010) indicated that quantitative research, "With its structure and no-nonsense measurement, can cut through a tangle of competing claims and anecdotes; qualitative research with its focus on description and understanding can lend meaning to what would otherwise be a sterile description of statistics."(p.134). The combinations of both research approaches were utilized in this study. McMillan and Wergin (2010) further stated, that when both are combined and done well they are systematic, rigorous and empirical. The mixed methods approach meets the criteria for educational research.

The justification for using this approach is by aligning the survey instrument with definitions and concepts from the P21 framework, the researcher was able to directly investigate the perceptions of elementary principals through the use of Likert scales. Subsequent

quantitative analysis allowed for the aggregation and disaggregation of scores to make meaning on a broader scale than qualitative methodology would allow. Through open-ended free response questions, the participants shared perspectives beyond the ratings to provide a fuller picture of their perceptions. According to Creswell (2009), concurrent mixed methods procedures provide a comprehensive analysis of the research problem. The researcher simultaneously "collects both forms of data and integrates the information in the interpretation of the overall results. Also in design, the researcher may embed one smaller form of data within another larger data collection in order to analyze different questions" (p.14-15).

Creswell (2009) further indicated that when making a determination to utilize a mixed method study, the researcher should consider three issues: timing, weighting, and mixing. Timing refers to the phases in which you collect qualitative or quantitative data. If it is collected in phases it is sequential and if it is gathered at the same time it is concurrent. The second issue to consider is weight or priority of the qualitative or quantitative data. There could be priority given to the use of the type of data over the other or they could both hold equal weight. The third issue, mixing the data refers to the stage in which the researcher mixes the two types of data. The data mixing may occur during data collection, data analysis or the interpretation stage. Furthermore, it is possible to occur at all three stages.

More specifically, this study utilized the concurrent embedded strategy of mixed methods. Creswell (2009) indicated that this is a good approach because both types of research are collected during one data collection period. It gives the study both types of data; quantitative and qualitative data. Furthermore, this study utilized a ten-question survey. Seven questions were quantitative, and three were qualitative. While the researchers intention was to embed the three qualitative questions into the primary survey and give all questions equal weight, several participants neglected to answer the three qualitative questions. Thus, giving the appearance that perhaps, the last three questions were not important to the researcher. However, all ten questions were considered equal in weight. The data mixing in this study occurred at all stages of the study; data collection, data analysis, and interpretation.

Research Questions

1. What are the perceptions of elementary principals in Virginia regarding the importance and relevance of 21st century skills as identified in the P21 framework?

2. To what degree are these skills embedded into teaching and learning practices in schools?
3. What challenges do principals perceive with regards to successful implementation of these 21st century skills?

Sample Selection

Purposeful sampling was used to gain insight of principals' perceptions of implementation of 21st century skills. Creswell (2009) states purposeful selection of participants or sites will help the researcher best understand the problem. Merriam (2009) further states, "purposeful sampling is based on the assumption that the investigator wants to discover, understand, and gain insight and therefore must select a sample from which the most can be learned" (p.77).

The sample for this study was all elementary principals working in southeastern Virginia (Region 2) during the 2014-2015 school year. Because of the need to gather data about the principals' perceptions regarding 21st century skills, principals were contacted directly. 225 principals were contacted via email. When requested, permission to conduct this study was sought from a representative within the school division.

Data Collection and Gathering Procedures

Upon successful prospectus examination, the researcher sought approval from the Institutional Review Board (IRB) at Virginia Polytechnic Institute and State University (see Appendix B). Once this approval was granted (see Appendix C), the researcher contacted, 225 principals in southeastern Virginia via email. Email addresses were obtain via the school website or Virginia Department of Education website. Electronic correspondence was sent to all principals in the form of an emailed letter, explaining the purpose of the study and providing a statement of informed consent (see Appendix D). A link to the survey was provided in the email. A reminder email was sent to participants (see Appendix E). The risk factors involved in participating in this survey and the certainty of maintaining confidentiality was included in the informed consent (Butin, 2010). Informed consent was implied when the participant took the survey.

Instrument Design and Validation

While awaiting IRB approval, members of the 2011 Virginia Polytechnic Institute and State University Doctoral Cohort were asked to pilot *The Survey of Elementary Principals' Perceptions of Implementing 21st Century Skills in Southeastern Virginia*. (see Appendix F). Based on feedback from the participants in the pilot, the language of some of the questions was simplified and the format of some of the questions was changed for clarity. This survey was developed in order to gain information about the perceptions of elementary principals and implementing 21st century skills. The survey questions were aligned with research questions and the P21 framework. A Likert Scale was utilized to determine; "very important," "somewhat important," "not important." This same scale was utilized to determine how relevant the skills are within a school division. In addition, a Likert Scale was utilized to determine how embedded the skills are within a school division (fully embedded, somewhat embedded, and not embedded). There were free response questions and rank order questions. By aligning the survey questions with the research questions, the researcher will obtain aligned responses from the participants. To measure the items on the instrument, both continuous scale items and categorical scales will be used (Creswell, 2009).

Data Treatment and Management

Every effort was made to maintain the confidentiality of survey participants. In the survey, the participants were not asked to provide their names or school divisions. A link for each school division was sent to the perspective principal for the sake of gathering data, and reporting participating divisions results. Each division was given a coded names or pseudonyms to ensure anonymity.

The Survey of Elementary Principals' Perceptions of Implementing 21st Century Skills in Southeastern Virginia was administered electronically. The electronic survey provided the ability to quickly reach more participants in Region two. This survey was designed with the busy principal in mind. Principals were able to respond quickly and at their convenience. As a resource, The Partnership for 21st Century Skills Framework was provided as a part of the survey. This was designed to help principals who may not be familiar with the framework. Data were collected using a password-protected account. At the conclusion of the survey administration, all information was downloaded and stored digitally on the researcher's password

protected computer. Hard copies of survey results, if made, were stored in a locked file cabinet at the researcher's home. At the conclusion of the dissertation defense, the survey response files will be destroyed.

Data Analysis Techniques

After reading the data, they have been organized and prepared for data analysis. The researcher utilized Excel and Survey Monkey to perform basic computation to assist in analyzing and gathering accurate data from large data sets. Various forms of descriptive and inferential statistics were used to gather information relating to the perceptions of principals regarding 21st century skills at the elementary level. Simple descriptive statistics such as, averages, percentages, frequencies, and mode and median will be used to provide an analysis of the obtained data (McMillan & Wergin, 2010).

The researcher searched for themes and connections in the responses of the open-ended survey questions. The data were analyzed using the *constant comparative method* of data analysis. According to Merriam (2009) "the constant comparative method of data analysis involves comparing one segment of data with another to determine similarities and differences.

Time Line

After receiving permission to proceed with the study, the initial email contacts to principals in school divisions in southeastern Virginia were sent out. The survey was sent utilizing an electronic format, Survey Monkey. The survey included the framework from P21. In addition a letter to principals requesting their participation and explaining the purpose of the study was sent directly to principals. When directed by school divisions, request to participate in the study, was sent to the superintendent or designee. The researcher provided a two-week time frame for return responses from participants. A reminder email was sent after one week. Since responses were low, another email was sent to extend the study. Another two-week window was established. After another week, a reminder email was sent. Phone calls were made and messages left. The analysis of data was completed at the end of January 2015.

Methodology Summary

The purpose of this study was to assess the perceptions of elementary school principals in Virginia regarding 21st century skills. This researcher utilized purposeful sampling of

elementary principals in Southeastern Virginia. As a means to collect data, electronic surveys, *The Survey of Elementary Principals' Perceptions of Implementing 21st Century Skills in Southeastern Virginia*, was disseminated. Descriptive statistics as well as qualitative analysis for open-ended questions were used to analyze and interpret the findings. The data will be shared in chapter 4.

Chapter 4
Results

Purpose of the Study

As we enter the second decade of the 21st century, we must take a closer look at the skills that will directly impact teaching and learning (Larson & Miller, 2011). While classroom teachers will play a significant role in implementing skills, (Davis, Darling-Hammond, Lapointe, & Meyerson, 2005) stated that it is the principals that will set the direction for the school and will be tasked with improving teaching and learning. The principal will be the driving force to lead teaching and learning in the 21st century. The purpose of this study is to identify the perceptions of elementary school principals in Virginia regarding the implementation of 21st century skills.

Data Collected

The ten-question survey, entitled *Principals' Perceptions of Implementing 21st Century Skills in Southeastern Virginia* (see Appendix C), was distributed electronically using Survey Monkey. The instrument asked participants to consider three broad categories of 21st century skills, as outlined by the P21 framework: Creativity and Innovation; Critical Thinking and Problem Solving; and Communication and Collaboration. Participants were to rate and rank the relevance of the skills, their embeddedness in the curriculum, and the importance of implementing the skills. Ratings took the form of a 4-point Likert scale (not at all (1), not very (2), somewhat (3), very (4)) with an option for "no opinion." Skill categories were ranked from 1 to 3, with 1 being "most" and 3 being "least." Additionally, participants were asked to respond to open ended questions regarding the inclusion of 21st century skills language on school documents as well as challenges associated with the implementation of 21st century skills in their school setting. The open ended questions allowed participants the opportunity to expand upon their perceptions. The data were analyzed quantitatively and qualitatively, as appropriate by question.

Population and Response Rates

As summarized in Table 1, all elementary principals (n=225) in 16 school divisions in the southeastern region of Virginia were invited to participate in this study . The Southeastern region of Virginia consist of Region 2-The Tidewater Region, as indicated by the Commonwealth of Virginia Department of Education's Superintendent's Region (www.doe.virginia.gov). Survey Monkey was utilized to distribute the surveys electronically, and 67 principals responded partially or fully, yielding a response rate of approximately 30%. The results of the survey are identified below, organized by research question.

Table 1

Data Collection Table by School Divisions.

Coded School Division	***Returned Surveys***
School Division A	3
School Division B	2
School Division C	9
School Division D	9
School Division E	18
School Division F	2
School Division G	18
School Division H	5
School Division I	1
School Division J	0
School Division K	0
School Division L	0
School Division M	0
School Division N	0
School Division O	0
School Division P	0

Research Question 1: What are the perceptions of elementary principals in Virginia regarding the importance and relevance of 21st century skills as identified in the P21 framework?

Importance ratings. As summarized in Figure 1 and Table 2, for all three-skill categories, a rating of 3, indicating it was "very" important, was the mode of participant responses. Creativity and Innovation received a rating of "very" important from 93% of participants,

Critical Thinking and Problem Solving received the "very" important rating from 97%, and 100% of responses indicated that the Communication and Collaboration category was "very" important. Worthy of note is that none of the skill categories were rated a 1 for "Not at all" important, while few participants (7% for Creativity and Innovation and 3% for Critical Thinking and Problem Solving) indicated moderate or low importance. In addition to the lowest mean score for importance (3.91), the category of Creativity and Innovation had the largest standard deviation (SD=. 33) compared to Critical Thinking and Problem Solving (SD=.29) and Communication and Collaboration (SD = 0), indicating there was a greater variety of opinions regarding the importance of Creativity and Innovation for elementary students among participants.

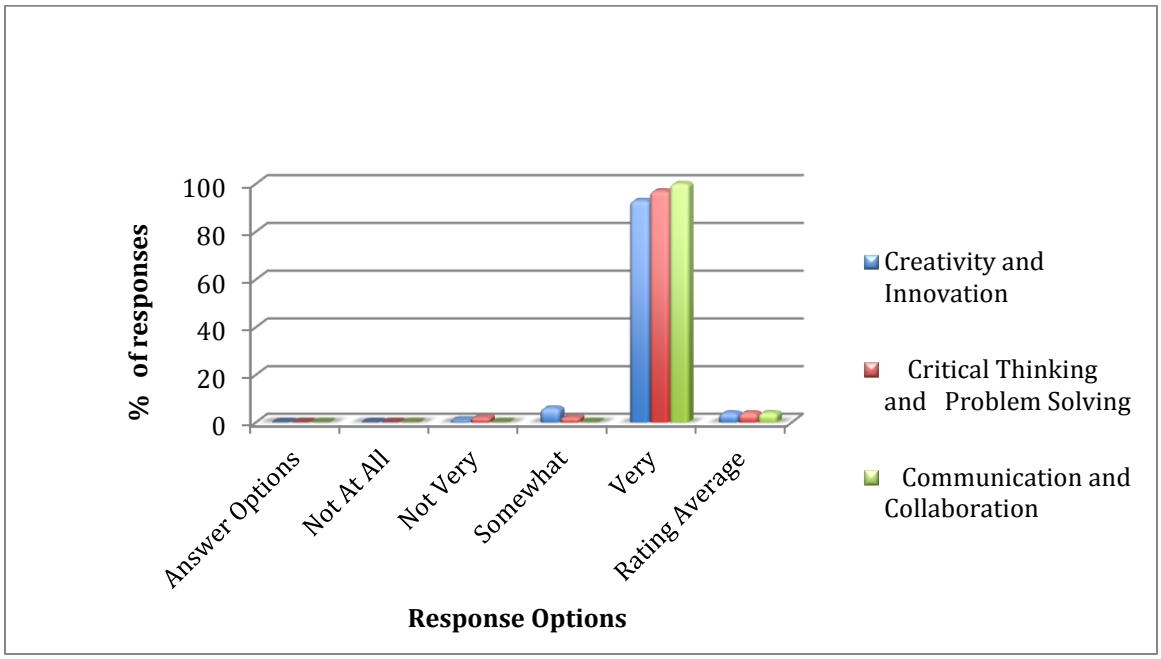

Figure 1. 21st Century Skills: Rate of Importance. The bar graph represents the Rate of Importance of 21st Century Skills; creativity, critical thinking and problem solving, and communication as perceived by elementary principal in Southeastern Virginia.

Table 2

21st Century Skills: Importance Ratings as Perceived by Elementary Principals.

	21st Century Skills					
	Creativity/ Innovation (n,%)		Critical Thinking/ Problem Solving (n,%)		Communication/ Collaboration (n,%)	
Responses	*N*	%	*N*	%	*N*	%
Not at all	0		0		0	
Not very	1	1.5%	1	1.5%	0	
Someway	4	6%	1	1.5%	0	
Very	62	93%	64	97%	66	100%
No opinion	0		0		0	
Average	3.91		3.95		4.0	

Importance rankings. Figure 2 and Table 3 summarize participant rankings of skill categories. More than half of participants (41 of 66, or 62%) indicated that Critical Thinking and Problem Solving was the most important skill category with an average response ranking of 1.52 (SD=. 72). Almost half of the participants, 32 out of 66 (48%), indicated that Communication and Collaboration was ranked as the second most important skill with an average ranking of 1.70 (SD=.65). Additionally, 46 of 66 participants (70%) indicated that Creativity and Innovation was the least important with an average ranking of 2.61 (SD=.65). Despite the highest mean score for *rank* order of importance the category; Critical Thinking and Problem Solving had the largest standard deviation (SD=.72) compared to Communication and Collaboration (SD=.65) and Creativity and Innovation(SD=.65). Conversely, when looking at *ratings* of importance the category Creativity and Innovation had the largest standard deviation (SD=.33), whereas when asking the question in a manner that participants were asked to rank order the skills there was a different consensus, the category Critical Thinking and Problem Solving had a larger standard deviation (SD=.72). There was more variety of opinions regarding ranking Critical Thinking and Problem Solving as their first choice.

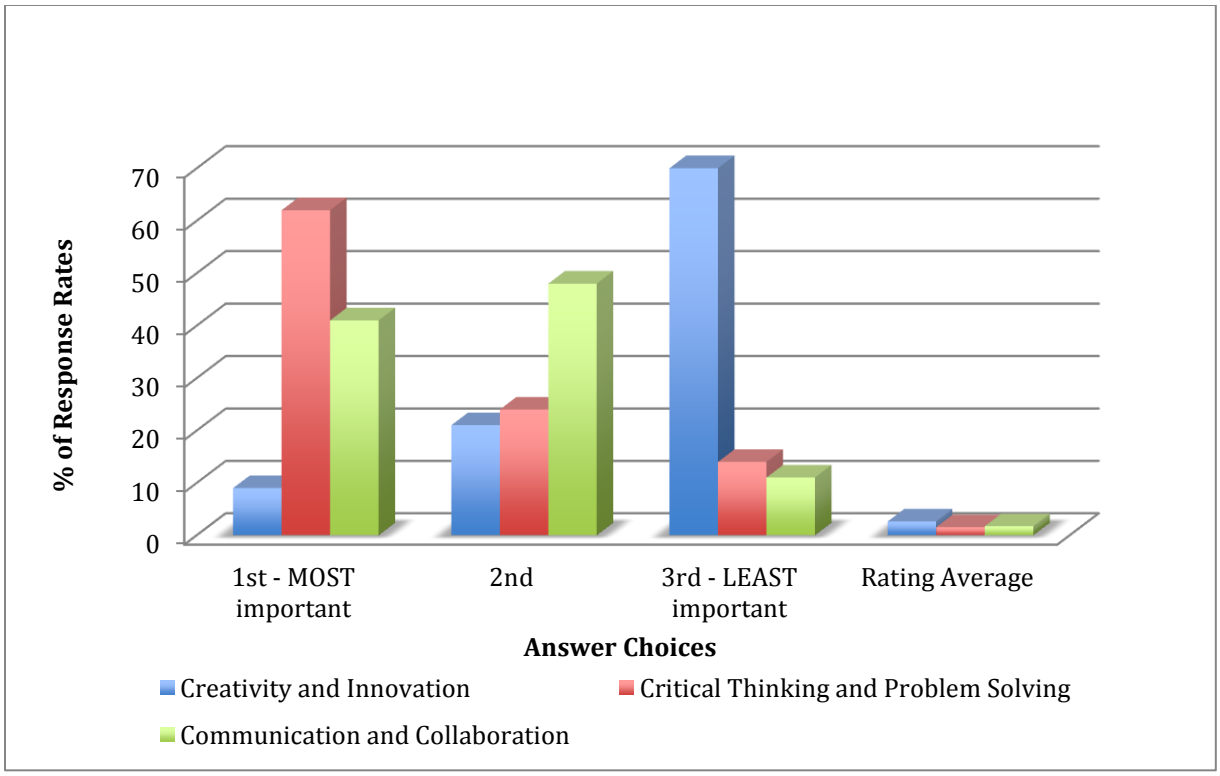

Figure 2. 21st Century Skills: Rank Order of Importance. The bar graph represents the *Rank* Order of Importance of 21st Century Skills; creativity and innovation, communication and collaboration, critical thinking and problem solving, as perceived by elementary principals in Southeastern Virginia.

Table 3

21st Century Skills: Importance Ranking as Perceived by Elementary Principals.

	21st Century Skills					
	Creativity/ Innovation (n,%)		Critical Thinking/ Problem Solving (n,%)		Communication/ Collaboration (n,%)	
	N	%	*N*	%	*N*	%
Rank #1	6	9%	41,	62%	27,	41%
Rank #2	14	21%	16,	24%	32,	48%
Rank #3	46	70%	9,	14%	7,	11%
Average	2.61		1.52		1.7	

Relevance ratings. As summarized in Figure 3 and Table 4, for all three-skill categories, a rating of 3, indicating it was "very" important, was the mode of participant responses.

Creativity and Innovation received a rating of "very important" from 89% of participants, Critical Thinking and Problem Solving received the rating from 97%, and 93% of responses indicated that the Communication and Collaboration category was very important. Worthy of note is that none of the skill categories were rated a 1 for "Not at all" or "Not Very" important, while few participants (11% for Creativity and Innovation and 3% for Critical Thinking and 6% Problem Solving respectively) indicated moderate or low importance. Despite the highest mean score for relevance, the category of Creativity and Innovation had the largest standard deviation (SD=.31) compared to Critical Thinking and Problem Solving (SD=.17) and Communication and Collaboration (SD = .24), indicating more variety of opinion regarding the relevance of Creativity and Innovation for elementary students among participants.

2. 21st Century Skills: Importance Ranking

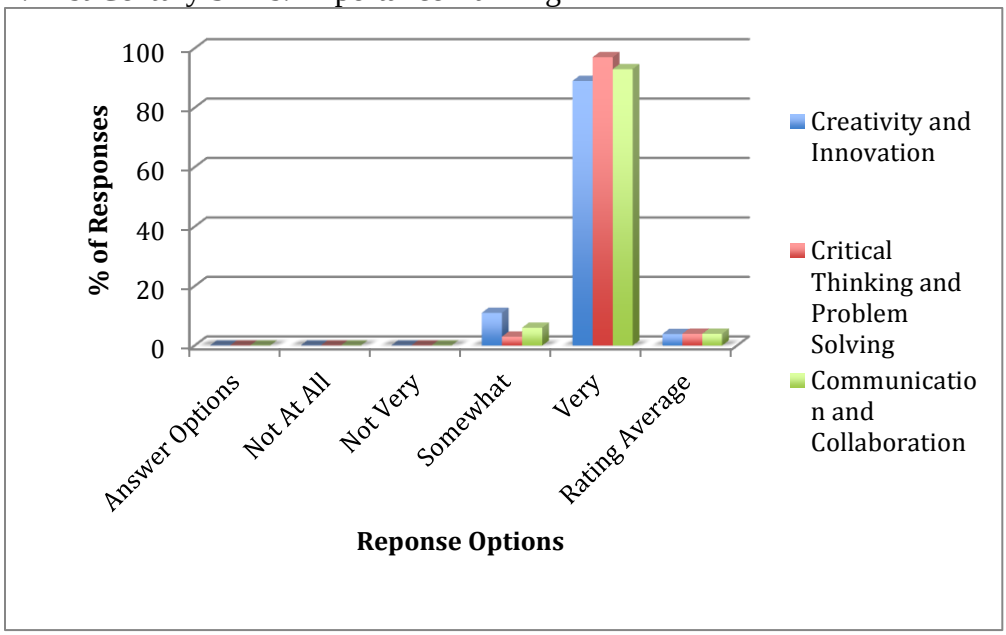

Figure 3. 21st Century Skills: Rate of Relevant Skills. The bar graph represents the *Rate* at which Elementary Principals perceived 21st century skills; creativity and innovation, critical thinking and problem solving, and communication and collaboration to relevant in elementary schools in Southwestern Virginia.

Table 4

21st Century Skills: Relevance Ratings as Indicated by Elementary Principals

	21st Century Skills					
	Creativity/ Innovation (n,%)		Critical Thinking/ Problem Solving (n,%)		Communication/ Collaboration (n,%)	
Responses	*N*	%	*N*	%	*N*	%
Not at all	0		0		0	
Not very	0		0		0	
Someway	7,	11%	2,	3%	4,	6%
Very	59,	89%	64,	97%	62	93%
No opinion	0		0		0	
Average	3.89		3.97		3.5	

Relevance rankings. Figure 4 and Table 5 summarizes participant rankings of skill categories. Half of participants (35 of 65 or 54%) indicated that critical thinking and problem solving is the most relevant skill category with an average response ranking of 1.60 (SD=. 72). Almost half of the participants, 30 out of 64 (47%) indicated that communication and collaboration is ranked as the second most important skill with an average ranking of 1.60 (SD=.66). Additionally, 45 of 65 participants (69%) indicated that Creativity and Innovation is the least important with an average ranking of 2.55 (SD=.72). Despite the highest mean score for rank order of relevancy the category; Critical Thinking and Problem Solving (SD=.72) and Creativity and Innovation shared the largest standard deviation (SD=.72) compared to Communication and Collaboration (SD=.66). Conversely, when looking at ratings of relevancy the category Critical Thinking and Problem Solving had the largest mean, whereas when asking the question in a manner that participants were asked to rank order the skills there was a different consensus, the category Creativity and Innovation had a standard deviation (SD=.31). There was more variety of opinions regarding ranking critical thinking skills as their first choice, indicating that they were not all in agreement.

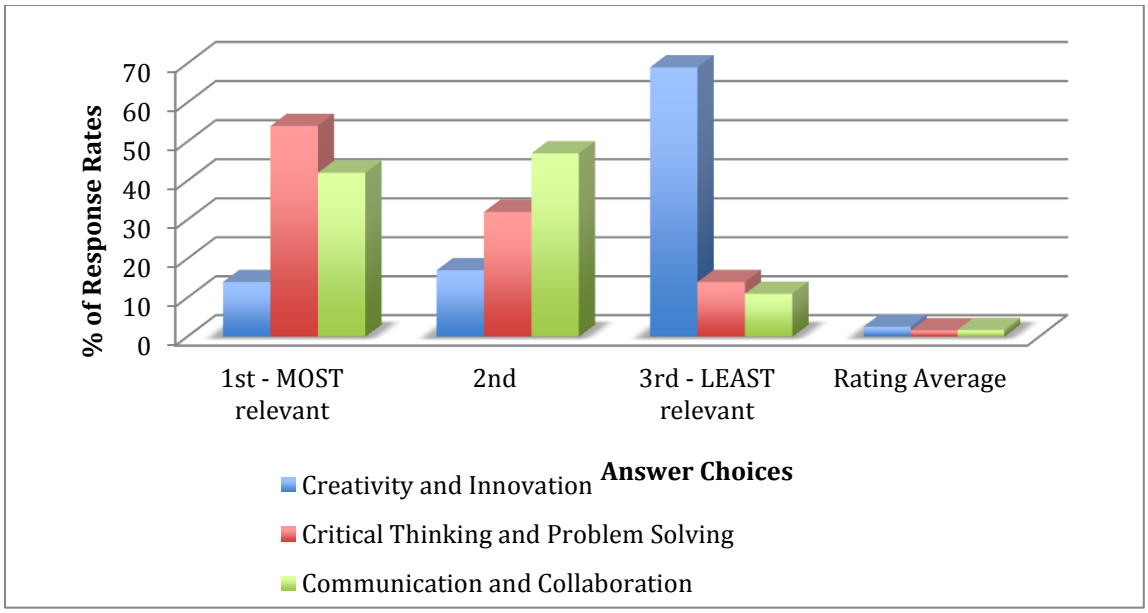

Figure 4. 21st Century Skills: Rank Order of Relevant Skills. The bar graphs represent the rate of response for the Rank Order of Relevant 21 Century Skills; Creativity and Innovation, Critical Thinking and Problem Solving, and Communication and Collaboration as perceived by Elementary Principals in Southeastern Virginia.

Table 5

21st Century Skills: Relevant Rankings as Perceived by Elementary Principals

	21st Century Skills					
	Creativity/ Innovation (n,%)		Critical Thinking/ Problem Solving (n,%)		Communication/ Collaboration (n,%)	
	N	%	*N*	%	*N*	%
Rank #1	9	14%	35	54%	27	42%
Rank #2	11	17%	21	32%	30	47%
Rank #3	45	69%	9	14%	7	11%
Average	2.55		1.60		1.69	

Research Question 2: To what degree are these skills embedded into teaching and learning practices in schools?

Ratings of embeddedness. Figure 5 and Table 6 both display two skill categories that received a rating of 3, indicating that those skills were "very" embedded into the curriculum. Critical Thinking and Problem Solving received a rating of "very" embedded from 45% of

participants, Communication and Collaboration received the rating from 62% indicating that the skills were "very" embedded in the curriculum. Worthy to note is that while critical thinking and problem solving had a "very" embedded rating of 30%, the "somewhat" embedded rating is 29%. Additionally, none of the skill categories were rated 1 for "Not at All" embedded, while few participants (16% for Creativity and Innovation, 11% for Critical Thinking and Problem Solving, and 12% for Communication and Collaboration) indicated that it was "Not Very" embedded in the curriculum. While the Elementary Principals perceived 21st century skills to be important and relevant; they acknowledged the level of embeddedness to be less.

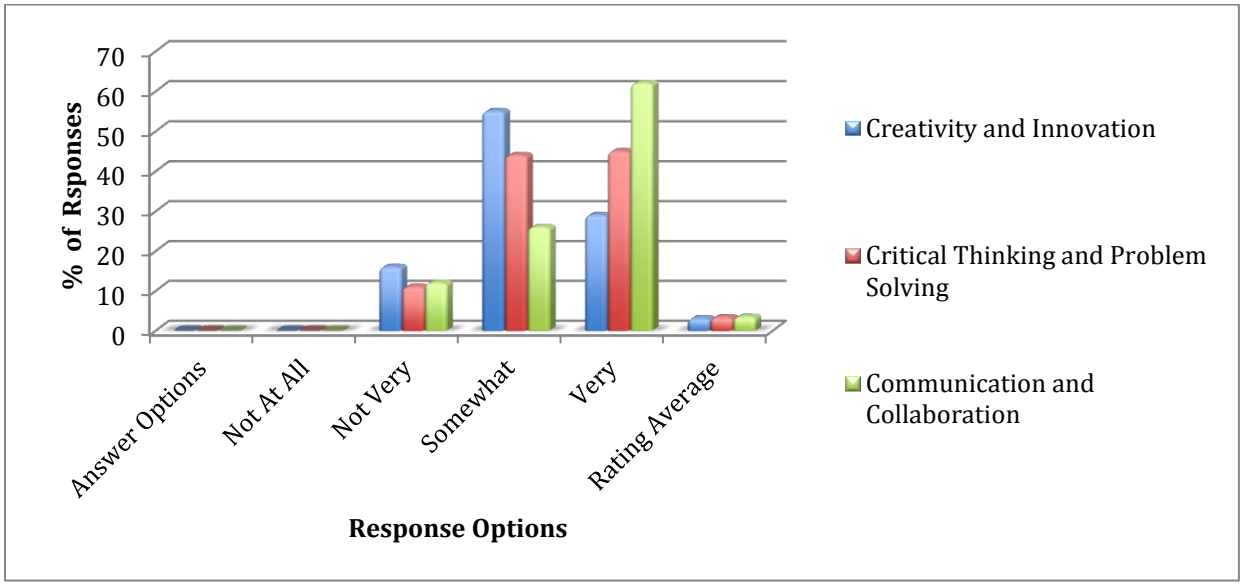

Figure 5. 21st Century Skills: Rate of Embeddedness. The bar graph represents the rate of embeddedness of 21st century skills in the current curriculum perceived by Elementary Principals in Southeastern Virginia.

Table 6

21st Century Skills: Embeddedness into the Curriculum

	21st Century Skills					
	Creativity/ Innovation (n,%)		Critical Thinking/ Problem Solving (n,%)		Communication/ Collaboration (n,%)	
Responses	*N*	%	*N*	%	*N*	%
Not at all	0		0		0	
Not very	11	16%	7	11%	8	12%
Someway	36	55%	29	44%	17	26%
Very	19	29%	30	45%	41	62%
No opinion	0		0		0	
Average	3.12		3.35		3.5	

Rankings of embeddedness. Figure 6 and Table 7 summarize participant rankings of skill categories. More than half of participants (35 of 66, or 53%) indicated that Communication and Collaboration is the skill category that is the "most embedded" into the curriculum. It had an average response ranking of 1.58 (SD=.68). Almost half of the participants, 31 out of 66 (47%) indicated that Critical Thinking and Problem Solving was the second most embedded skill with an average ranking of 1.77 (SD=.69). Additionally, 50 of 66 participants (77%) indicated that Creativity and Innovation is the least embedded with an average ranking of 2.68 (SD=.64).

Despite the highest mean score for rank order of embeddedness the category; Creativity and Innovation had the lowest standard deviation (SD=.64) compared to Communication and Collaboration (SD=.68) and Critical Thinking and Problem Solving (SD=.69). There were minimal opinions regarding ranking communication and collaboration skills as their first choice of skills that are embedded into the curriculum, which indicated that most participants found these skills to be most embedded.

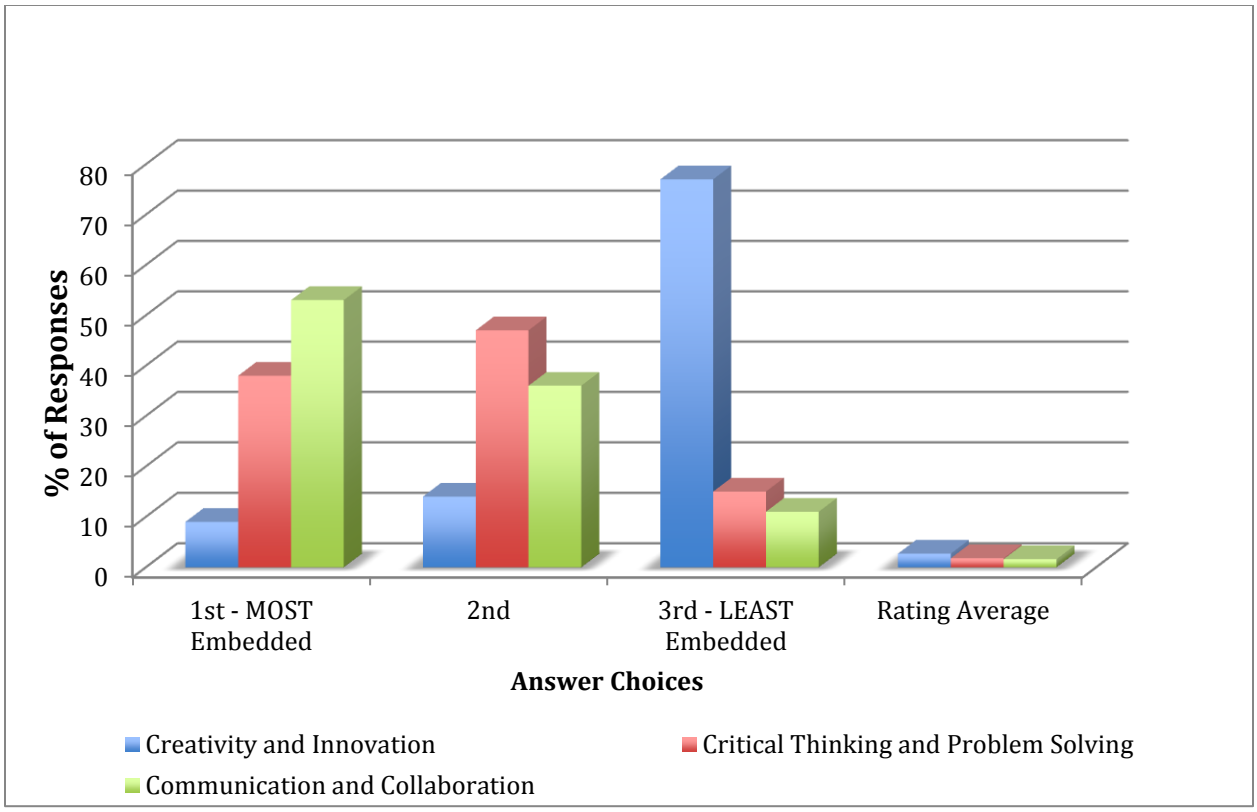

Figure 6. 21st Century Skills: Rank Order of Embeddedness. The bar graph represents the Rank Order of which elementary principals perceived 21st Century skills to be embedded into the curriculum in Elementary Principals in Southeastern Virginia.

Table 7

21st Century Skills: Embeddedness Rankings as Perceived by Elementary Principals

	21st Century Skills					
	Creativity/ Innovation (n,%)		Critical Thinking/ Problem Solving (n,%)		Communication/ Collaboration (n,%)	
	N	%	*N*	%	*N*	%
Rank #1	6	9%	25	38%	35	53%
Rank #2	9	14%	31	47%	24	36%
Rank #3	50	77%	10	15%	7	11%
Average	2.68		1.77		1.58	

Prominence as an aspect of embeddedness. In addition to providing perceptions about importance and relevance of skills, participants were asked to consider the school documents and whether or not 21st Century Skill categories are mentioned within them. The following table (see Table 8) indicates the responses for survey question 7. Respondents indicated that the school website (74%) and school mission statement (72%) mentioned 21st century skills in these documents. Thus, indicating that these documents have 21st Century Skills embedded within their context.

Table 8

21st Century Skills: Embeddedness into Documents Principals Indicate the Schoolwide Documents that Have 21st Century Skill Information Mentioned Within their Context.

	Response Rates	
	Percentages	Response Counts
Website	74%	45
Blogs	7%	4
Newsletters	62%	38
Brochures	28%	17
Mission or Vision Statement	72%	44
Other		5
Total Respondents: 61		

Summary of Research Questions 1 and 2 by Skill

Creativity and Innovation. The majority of participants; 36 out of 66 (55%) indicated that Creativity and Innovation was somewhat embedded into the curriculum (see Table 6.). Furthermore, 19 out of 66 (29%) participants indicated that Creativity and Innovation was "very" embedded into the curriculum. Finally, 11 out of 66 participants (16%) indicated that creativity and innovation was somewhat embedded into the curriculum**.**

Most participants, 93%, indicated that the skills Creativity and Innovation were important for elementary students (see Figure 7). In addition, most participants, 89%, indicated that the skills were relevant for elementary students. However, 29% indicated that the skills creativity and innovation was embedded into the curriculum and instruction in elementary schools. The

data indicate that most participants indicated that Creativity and Innovation is important and relevant; however the level of embeddedness into the curriculum is significantly lower.

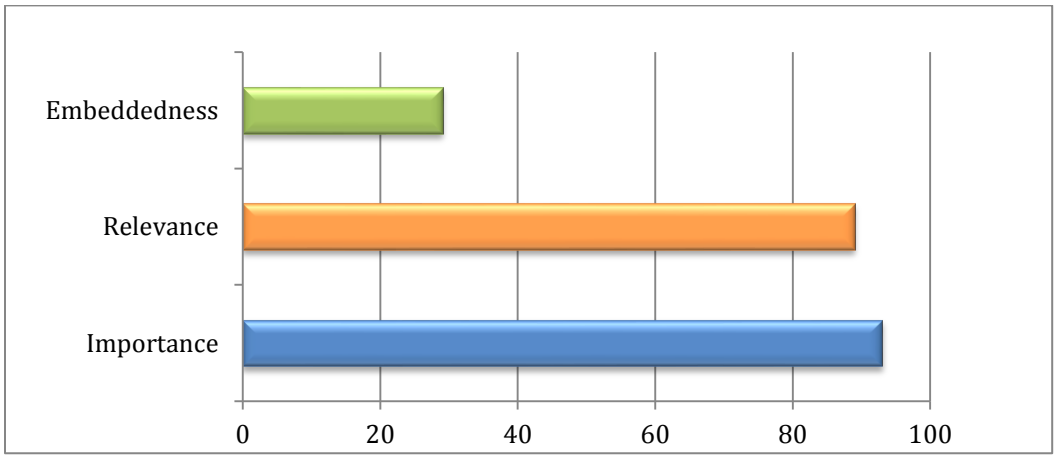

Figure 7. A Comparison of Embeddedness to the Rate of Importance and Relevance for 21st Century Skills, Creativity and Innovation. The bar graph indicates that elementary principals reported that the skills Creativity and Innovation are important; however they are not embedded into the curriculum.

Critical Thinking and Problem Solving. Over half of the participants, 30 out of 66, 45%, indicated that Critical Thinking and Problem Solving skills were "very" embedded into the curriculum (see Table 6). Additionally, 29 out of 66 (44%) indicated that these skills were "somewhat" embedded into the curriculum. Finally, 7 out of 66 (11%) indicated that these skills were "not very" embedded into the curriculum.

Most participants (97%), indicated that the skills Critical Thinking and Creativity were "very" important for elementary students (Figure 8). In addition, most participants (97%) indicated that the skills were "very" relevant for elementary students. However, 45% of participants indicated that Critical Thinking and Problem Solving Skills are embedded into the curriculum and instruction rated in elementary schools. Most participants indicated that these skills were important and relevant. Almost one-half of the participants thought they were embedded into the curriculum.

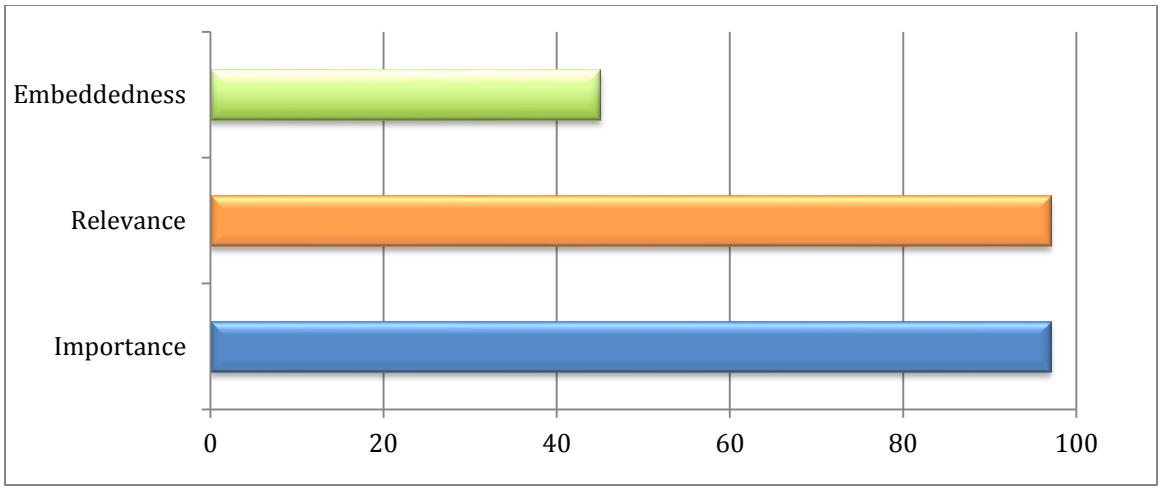

Figure 8. A Comparison of Embeddedness to the Rate of Importance and Relevance for 21st Century Skills, Critical Thinking and Problem Solving. The bar graph indicates that principals in southeastern Virginia identified Critical Thinking and Problem Solving as being an important skill for elementary students; however, its rate of embeddedness into the curriculm is low.

Communication and collaboration. The majority of participants, 41 out of 66 (62%), responded that Communication and Collaboration were "very" embedded into the elementary curriculum (see Table 6). Furthermore, 17 out of 66 (26%) indicated that Communication and Collaboration were "somewhat" embedded into the curriculum. Finally, 8 out of 66 (12%) indicated that these skills were "not very" embedded into the curriculum.

All participants (100%), indicated that the skills Communication and Collaboration were "very" important for elementary students (see Figure 9). In addition, most participants (94%) indicated that the skills were "very" relevant for elementary students. Conversly, (62%) of participants indicated that Communication and Collaboration were embedded into the curriculum and instruction in elementary schools. Most participants found Communication and Collaboration to be very important and relevant, and most principal's perceived these skills to be embedded in the curriculum at a higher rate than the other two skills categories.

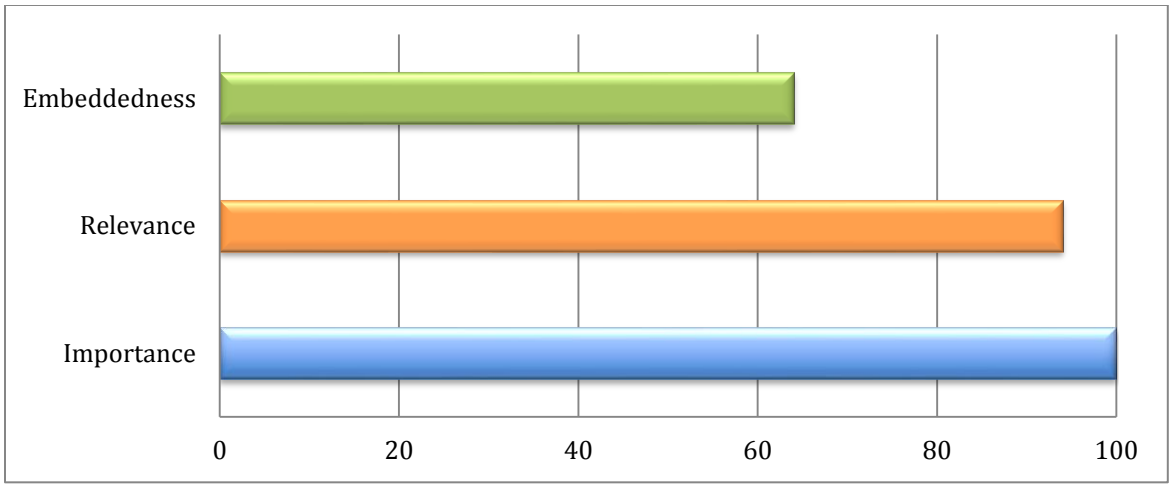

Figure 9. A Comparison of Embeddedness to the Rate of Importance and Relevance for 21st Century Skills, Communication and Collaboration. The bar graph indicates that principals in southeastern Virginia identified Communication and Collaboration as being an important skill for elementary students; however, its rate of embeddedness into the curriculm is low when compared to the importance.

Research Question 3. What *challenges* do principals perceive with regard to successful implementation of these 21st century skills?

To answer this research question, the instrument, *Principals' Perceptions of Implementing 21st Century Skills in Southeastern Virginia* (see Appendix C) included three open-ended questions (items 8, 9, and 10) to give the respondent and opportunity to share more in-depth responses.

After reviewing the responses from each participant, these qualitative data were categorized and coded to identify themes for each question. For reporting purposes, each question, will be identified and its resulting themes will follow. An analysis of each theme will be shared.

Survey Question 8 - How specifically, do you support teachers in addressing 21st century skills? In reviewing the responses, as indicated in Table 9, the following themes were identified: professional development, collaboration, and instruction.

Professional Development. Professional development represented the most common response, as 26 of 48, or 54% participants, indicated that professional development was a way to support teachers in addressing 21st century skills. Respondent #17 stated,

> Teachers are supported through weekly professional development sessions at the building level. Teachers are encouraged to present topics and concepts relevant to 21st century

> skills. Although teachers do express concerns and issues with creativity within the curricula, they do have the opportunity to collaborate with other educators and higher learning institutions for guidance with moving forward with critical skills.

Respondent #6 stated, "Teachers are provided professional development on how to make these skills part of instruction." Respondent #31 indicated,

> I have worked with teachers to define 21st century skills and their importance on the global stage. Currently working with teachers through professional development to plan lessons to foster and facilitate emphasis on these skills. solving, inquiry, etc.

Respondent #27 indicated, "I provide teachers with job-embedded professional development on the 21st century skills." Respondent #47 indicated, "We utilize weekly job embedded professional development to enhance the understanding, use and integration of the concept across all grade levels." Lastly, respondent #44 indicated, "We provide a lot of staff development on the use of Accountable Talk, higher level questioning, STEM, problem solving, inquiry, etc."

Over all, it is perceived by Elementary Principals that the best way to support teachers in implementing 21st century skills is to provide Professional Development.

Collaboration. The second theme to emerge from the question regarding supporting teachers is collaboration. There were 14 out of 48 responses (29%) that indicated that the best way to support 21st century teachers when addressing 21st century skills was through collaboration. Respondent #23 indicated skills were best addressed "by discussions." Respondent #8 indicated, "Through discussions and key activities such as collaborative planning, collaborative scoring, professional development, observation conferences and feedback." Respondent #46, stated, "Weekly collaboration to address the elements above across the curriculum. School environment that supports risk taking by all stakeholders." Respondent #26 indicated, "We allow teacher to collaborate to create engaging lessons that incorporate the above stated 21st century skills. This is done by providing protected time to plan with one another." Lastly, respondent #34 indicated,

> Providing teachers with time to collaborate and plan innovative lessons. Providing them with the resources and tools to be implement effective lessons. Encouraging and giving

positive feedback during observations and informal walk through when I see high quality instruction involving problem solving, critical thinking, and cooperative learning.

Instruction. The third theme that emerged from the data related to Instruction, 8 out of 48 respondents (16%) felt that teachers received support from Principals as the curriculum was implemented. Principals felt that they could provide support on teaching the curriculum. Respondent #33 stated, principals provide support through "coaching and demonstrating lessons". Respondent #14 indicated, principals provide support when "We design goals to address 21st Century Goals and we work as a team to support 21st Century learning in the classroom and school." Lastly, respondent #32 stated, "Teachers are encouraged to not only teach the 21st century skills, but teachers are encouraged to be active users of technology as well as to use research based strategies that will lead our students forward." Overall some principals perceived they could best help teachers through implementation of the curriculum.

Table 9

Challenges of Implementing 21st Century Skills

Survey Question 8	How Do You Support Teachers in Addressing 21st Century Skills?	
Themes	(N, %) of Responses	(N, %) of Responses
Professional Development	26	54%
Collaboration	14	29%
Instruction	8	16%

Survey Question 9- Specifically, how are teachers teaching 21st century skills?

In reviewing the responses, as indicated in Table 10, the following four themes were identified: Teaching and Learning, Special Programs, Curriculum, and Project Based Learning.

Teaching and Learning. There were 16 responses out of 40 (40%) that indicated that teachers were teaching 21st Century Skills through direct instruction. Respondent #8 indicated, "21st century skills are being taught through technology integration, problem solving and justification in math, and during reading and writing." Respondent #7 stated, "Our school does monthly math exemplars which is aimed at teaching problems solving. Students must show their work and find more than one way to solve a problem." Respondent #30 stated, "Recently there is

an emphasis on defining the cognitive level of each lesson with the idea being that we should be providing students with several opportunities to engage in critical thinking activities daily". Almost half of the principals indicate that teachers are teaching 21st century skills through direct instruction. Direct instruction is instruction that is based on daily lessons in the core content areas.

Special Programs. There were 9 respondents out of 40 (23%) who indicated that teachers were teaching 21st century skills through special programs. Respondent #6 indicated that there are "opportunities to participate in PTA REFLECTIONS and the CHROME PROGRAM". Respondent #19 stated, "Grade level themes STEM opportunities Implementing 'Gifted' educational opportunities to all students that used to reserved only for identified gifted students." Respondent #24 indicated, "Young Scholars Program that focuses on Math and Science, the Middle School GPS (Gators Presidential Scholars) Program and the SOL After School Tutoring Program. Overall, a small percentage indicated that 21st century skills are being delivered through the Special Programs.

Curriculum. There were 9 out of 40 responses (23%) that indicated that teachers were teaching 21st century skills through the use of the curriculum. Respondent #3 indicated that "when the curriculum is taught with fidelity, 21st century skills are taught." Respondent #12 stated that, "All of the 21st century skills are embedded into the school division's curriculum." Lastly, respondent #38 replied, "By using the curriculum, our teachers are using the skills in numerous ways. The teachers use what they think is the most appropriate way to teach the skill. This allows the student to grow and develop." Overall, a small percentage of participants indicated that 21st century skills are not being delivered through the curriculum.

Project Based Learning. There were 6 out of 40 responses (15%) that indicated that teachers were teaching 21stCentury Skills through the use of Project Based Learning. Respondent #2 stated, "About 50% of our staff have been trained in Project Based Learning (PBL) and is *[sic]* required to plan and execute two PBL units each school year. 21st Century Learning Skills are embedded through this process." Respondent #1 simply stated, through "Project Based Learning Projects." Respondent #3 stated, "Teachers provide activities that require 21st century skills through projects, experiments, and presentations. The lower grades focus on themes and incorporate them into the core subject areas." Overall, a small percentage of respondents identified Project Based Learning as the best way to teach 21st Century Skills.

Table 10

Challenges of Implementing 21st Century Skills

Survey Question 9	How are Teachers Teaching 21st Century Skills?	
Themes	*N*,	% of Responses
Teaching and Learning	16	4%
Special Programs	9	22.5%
Curriculum	9	22.5%
Project Based Learning	6	15%

Survey Question 10 - What are the challenges related to implementing the teaching of 21st century skills (defined as Creativity, Innovation, Critical Thinking, Problem Solving, Communication, and/or Collaboration) in your Schools?

After analyzing data qualitatively, as indicated in Table 11, four themes emerged: Time, Teacher Learning, School Based Issues, and Curriculum.

Time. Nearly half of respondents (21 out of 45 or 47%) indicated that time were a major challenge for implementing 21st century skills. Respondent #3 indicated, "Trying to provide the instructional time needed to effectively incorporate and utilize 21st century skills" is a challenge. Respondent #28 stated, "time and resources" were a concern. Respondent #47 indicated, "We needed time for staff development."

Teacher Learning. There were 11 out of 45 (24%) respondents that indicated teaching and learning was a challenge. Principals indicate that some teachers struggle with implementing 21st century skills. Some concerns were based on knowing best practices to effectively teach the skills to students in the classroom. Respondent #2 stated, "Teachers struggle with implementing and teaching 21st century learning skills and ensuring students meet the standards from the state. It is a balancing act that only a few have mastered." Respondent #18 indicated,

> The greatest challenge is the 'learning curve' for teachers. Our teacher are still acquiring the concepts and learning how to practice the skills needed to 'teach' these in the classroom. I believe we often miss the fact that many of our students are already more comfortable with 21st century skills than we are. We are also challenged by those students who lack the capacity for some of the higher-level thinking for those students are required to use 21st Century Skills.

Respondent #27 stated, “Encourage teachers to take risks more through 21st century skills in this age of teacher accountability.”

School-based issues. School-based issues relate to those issues that arise at the school level. They may not be instructional, curriculum or time related. Our data indicated that 6 out 45 participants (13%) reported these issues were a challenge. Respondent #31 stated,

> Overcoming obstacles such as background knowledge and lack of exposure that limit the acquisition of these skills. I work in a disadvantaged community where many of the students come to school unprepared due to limited resources, illiteracy in the home, parental substance abuse and incarceration.

Respondent #45 indicated that “consistent implementation by teachers” is considered a challenge. Respondent #24 states, “parental involvement is considered a challenge” as well.

Curriculum. Seven respondents out of 45 (16%) indicated the curriculum was a concern. Respondent #36 indicated, “Teachers are focused on essential knowledge and skills of SOLs, versus essential understandings. A paradigm shift must occur to connect the former to develop the latter.” Respondent #39 indicated that a challenge could be a “Tight curriculum with pacing limiting creativity.” Respondent #37 shared, Teachers feel constrained by the demands of the Standards of Learning assessments given by the state of VA. Respondents indicated that approximately one-quarter of participants found the curriculum to be a challenge to implement 21st century skills. Time was the most reported challenge by principals.

Table 11

Challenges of Implementing of 21st Century Skills

Survey Question 10	What are the Challenges Related to Implementing the Teaching of 21st Century Skills?	
Themes	*N*,	% of Responses
Time	21	47%
Teacher Learning	11	24%
School Based Issues	6	13%
Curriculum	7	16%

Chapter Summary

Chapter four presented the data collected from the results of survey received from 67 elementary principals in Southeastern Virginia. In table 12, Quantitative data were summarized from the survey to determine principals' perceptions of the importance, relevance and embeddedness of 21st century skills at their elementary school sites. The data were presented in bar graphs, tables, and discussed in a narrative. Qualitative data from the survey were gleaned through open-ended questions regarding methods used to support implementation and the challenges associated with implementing 21st century skills in Southeastern Virginia elementary schools. The results of the data were presented around the three research questions driving this study. Overall, the results of the data suggest that 21st century skills are important and relevant to elementary students but not highly embedded into the curriculum. Chapter Five will include major findings, implications of findings, recommendations for future research, and researcher reflections.

Table 12

21st Century Skills: A Comparison of Ratings in the Three Categories of 21st Century Skills

	Ratings					
	Importance (n,%)		Relevance (n,%)		Embeddedness (n,%)	
Responses	*N*	%	*N*	%	*N*	%
Creativity and Innovation	62	93%	59	89%	19	29%
Critical Thinking and Problem Solving	64	97%	64	97%	30	45%
Communication and Collaboration	66	100%	62	94%	41	62%

Chapter 5

Summary and Conclusion

The purpose of this study was to identify the perceptions of elementary school principals in Virginia regarding the implementation of 21st century skills. There were three research questions that were used as the basis for inquiry. They are as follows: (1) What are the perceptions of elementary principals in Virginia regarding the importance and relevance of 21st century skills as identified in the P21 framework? (2) To what degree are these skills embedded into teaching and learning practices in schools? (3) What challenges do principals perceive with regards to successful implementation of 21st century skills? This chapter includes the findings, implications for practitioners, and recommendations for future research.

Findings

The data provided in Chapter 4 have led to several findings. Those findings are provided, with justification and research relevance in the following paragraphs.

Finding One. Surveyed elementary principals identified Critical Thinking and Problem Solving as the most important 21st Century Skill for elementary students. On the survey, 41 (62%) of the participants indicated that Critical Thinking and Problem Solving was the most important 21st century skill category. Additionally, 32 (48%) indicated that Communication and Collaboration was the second most important and 46 (70%) indicated that Creativity and Innovation was the third most relevant skill in elementary schools. When looking at the average ratings for each of these three areas, the order remained the same with Critical Thinking and Problem solving have a mean of 1.52, Communication and Collaboration having a mean score of 1.70, and Creativity and Innovation having a mean score of 2.61.

Wagner (2008) indicated that there were seven survival skills for the 21st Century. His first survival skill is critical thinking and problem solving. The power to ask good questions is an important part of critical thinking. The ability to problem-solve and ask good questions is an essential skill. This skill is essential to our students, workforce and community. Additionally, Wagner states that critical thinking and problem solving are skills students need to participate in a democratic society. The research conducted with the elementary principals support research

conducted by Wagner in 2008. Critical thinking and problem solving are very important skills in elementary schools as well as in high schools and the workforce.

Finding Two. Surveyed elementary principals identified Critical Thinking and Problem Solving as the most relevant 21st Century Skill for elementary students. On the survey, 35 (54%) of the participants indicated that Critical Thinking and Problem Solving were the most relevant skill. Additionally, 21 (32%) indicated that Communication and Collaboration was the second most important and 45 (69%) indicated Creativity and Innovation was the third most relevant skill in elementary schools. When looking at the average rank order for each of these three areas, the order remained the same with Critical Thinking and Problem solving have a mean score of 1.60, Communication and Collaboration having a mean score of 1.69, and Creativity and Innovation having a mean score of 2.55.

Wagner (2008) indicated that relevant information should be characterized by a shift from instructing from memorization and recall to a instructing the skills needed for work and life, and life and citizenship in the 21st century (Friedman, 2007; Schmoker, 2008; Wagner 2008a).

Principals indicate that 21st century skills are relevant in elementary schools; more specifically critical thinking and problem solving was perceived as the most relevant. The research conducted supports the research conducted by Wagner, 21st century skills are relevant in elementary schools as well as other aspects of work, life and citizenship.

Finding Three. **Surveyed elementary principals identified Communication and Collaboration as the category of 21s Century Skills that is the most embedded into the curriculum and instruction for elementary students.** On the survey, when analyzing rank order, 35 participants (53%) indicated that the skill set Communication and Collaboration was embedded the most into the curriculum. Additionally, 31 (47%) indicated that Critical Thinking and Problem Solving skills were the second most embedded and 50 (77%) indicated that Creativity and Innovation was the third most embedded skill. When looking at the average ratings for each of these three areas, the order remained the same with Communication and Collaboration having a mean score of 1.58, Critical Thinking and Problem Solving having a mean score of 1.77, and Creativity and Innovation having a mean score of 2.68.

Larson and Miller (2011) indicated that 21st century skills should be taught in the context of the current curriculum. Students should be given the opportunity for authentic learning

experiences. Skills like communication and collaboration, and innovative thinking and problem solving should be embedded into the curriculum. In looking at the ranking Creativity and Innovation was ranked 3. While it is noted that 70% of those respondents rated the group as the third most embedded skills.

As indicated, the majority of participants found Communication and Collaboration to be 21st century skills that are the most embedded into the curriculum. The skills that were perceived by elementary principals as being the least embedded were Creativity and Innovation. The research suggests that skills should be embedded into the curriculum. The finding from the elementary principals indicate that about one-half of the elementary principals perceived Communication and Collaboration to be embedded into the curriculum and about one-half of principals perceived critical thinking and problem solving to be embedded into the curriculum. Conversely, over half of the principals responded that Creativity and Innovation was not embedded into the curriculum. Larson and Miller indicated that 21st century skills should be embedded into the curriculum.

Finding Four. Elementary principals indicated that 21st Century Learning Skills were mentioned most often on the school website, mission or vision statement and the school newsletter. On the survey, 45 (74%) indicated that it was mentioned in the school website, 38 (62%) indicated that 21st century skill were mentioned in the newsletters, 17 (28%) indicated that 21st century skills were mentioned in brochures, and 44 (72%) indicated that 21st century skills were mentioned in the mission statement. The survey indicated that information regarding 21st century skills were embedded in various locations that have embraced implementing 21st century skills The Partnership for 21st Century Learning (2010) indicates that it is very important to look at all components of a program that embeds 21st century skills. Intentional embedding of the skills in conversation to stakeholders is another way to assure knowledge of the skills and support of implementation in the classroom (www.p21.org).

Finding Five. Elementary principals' indicated that the level of embeddedness of the 21st century skills was not as high as their perceived importance and relevance. While the elementary principals rated the importance and relevance of 21st century skills as "very" high (97%, 97%), they rated the level of embeddedness lower.

Elementary principals perceived *importance* and *relevance* of implementing 21st century skills as very important and relevant to teaching elementary students. However, when asked if

the three categories of 21st Century Skills were already embedded into the curriculum the responses were much lower. As indicated in Table 7, the skills are being embedded to some degree but not to the degree that elementary principals indicate the skills are important and relevant.

Silva (2009) shared that students must be given the opportunity to use and develop skills within the same context of the core subjects. More specifically, higher order thinking and problem solving skills must be taught within the same context as the core subjects. It is the combination of instruction that will prepare our children for the 21st Century.

Finding Six. Elementary principals indicated that time were the most frequent inhibitor of teaching 21st century skills. On the survey, 47% of responding principals indicated that adequate time was the biggest challenge to implementing 21st century skills in the classroom. Darling-Hammond (2010) indicates that the majority of teachers in the United States do not have time to meet with other colleagues or professionals. In addition more teachers in the United States teach more hours than other OECD countries. Yet they still *feel* as though they do not have enough time to teach and manage all that is being asked of them. Darling-Hammond, states that "A greater percentage of U.S. teachers' work time is spent teaching," (p.202). The time to collaborate with peers and plan is not as abundant as the time-spent teaching.

Finding Seven. Elementary principals indicated that professional development is the best way to support teachers in addressing 21st century skills. Responses from elementary principal indicated that there were three areas in which principals provided support for 21st century skills. Those three areas were Professional Development (28 out of 48 or 58%), Collaboration (14 out of 48 or 29%), and Instruction (6 out of 48 or 13%).

The Partnership for 21st Century Learning (http:www.p21.org) indicated that professional development that is centered around 21st century skills is designed to prepare teachers and principals to integrate 21st century skills into their schools. This integration of skills into the curriculum should include updates to the standards and assessments. "New teachers will be prepared to become change agents for embedding 21st century knowledge and skills in all subjects in P-12 curricula in accordance with national and state standards."(p.4).

Finding Eight. Elementary principals indicated that Daily instruction is the best ways teachers deliver 21st century skills. Elementary principals indicated that daily classroom instruction was the best way teachers deliver instruction about 21st century skills (40%). The

Partnership for 21st Century Learning (2009b) supports the findings that daily instruction is very important to implementing the skills. One of the key reasons for professional development is to assure teachers understand the importance and to make sure they know how to effectively deliver instruction related to the skills in their daily instruction.

Implications

Based on the findings indicated in this chapter, the following implications for principals, division leadership teams (DLT), leaders of teachers and preparation programs, and state policymakers will be discussed.

For Principals

Principals should provide professional development to help teachers manage time to implement 21st century skills. Based on the findings of this study, principals indicated that professional development is the best way to help teachers implement 21st century skills. Professional development should be provided to teachers to provide a clear understanding of integrating the 21st Learning Skills into the curriculum. Teachers must understand that teaching these skills are not in addition to the curriculum, nor is it an add on to the curriculum. These skills should be embedded into teaching and learning and a part of the daily curriculum. In addition, time management techniques should be reviewed to help teachers maintain their attention and focus on instruction.

Principals should be the instructional leaders within their schools. The results of this study indicate that elementary principals report that their teachers utilize direct instruction as the best means to teach 21st century skills. Research and best practices indicate that principals should lead instruction within their schools. Principals should lead instruction of the core content areas; however, an emphasis should be placed on monitoring best practices for implementing and teaching 21st century skills. Principals should not only be knowledgeable about the Virginia Standards of Learning, the pacing for the division, the content and best instructional strategies; the principals should be knowledgeable about the acquisition of 21st century skills.

Principals should continue to monitor instruction by being present in the classroom and providing ongoing feedback to teachers as they incorporate 21st century learning skills. Principals should systematically monitor instruction and provide feedback to teachers about their

lessons. Discussion should be conducted about the implementation of 21st century skills and the alignment to the written, taught and assessed curriculum. More specifically, principals should provide feedback on the delivery of the written lesson and its impact on student achievement.

Principals should work with teachers to build professional learning communities that support 21st century learning skills. A collaborative model should be followed, which promotes student learning with an intentional focus on collaboration about student learning based on data. Since 21st Century Learning Skills should not be taught in isolation (Silva 2009), collaboration about student progress in the core subjects should be held, which should include an ongoing discussions about the success of 21st century skills. Results from this survey indicate that teachers see time as a challenge when teaching 21st century skills. Professional Learning Communities can be one way to address the concern of time. Teachers and administrators can collaborate on the best way students learn and together decisions about "Time" can be made. Principals should have the flexibility to provide opportunities to allow teachers times for vertical and horizontal articulation. Principals and teachers should make decisions about learning based on data. If data indicate a need for an extension to the school day, teachers and principals should work together to make changes in the schedule. Principals and teachers should work together to build a learning community that is built on mutual trust, the ability to try new ideas, and genuine conversations.

For the Division Leadership Team (DLT).

Professional Development should be centered on unpacking VA Standards of Learning and developing a common understanding of 21st century skills and their implementation into VA Standards. Research from this study suggests that the skills of critical thinking and problems solving are embedded within the curriculum. In addition it is suggested that communication and collaboration are embedded into the curriculum. Teachers and principals should work from a common understanding of teaching the skills. Training should specifically help principals and teachers identify the skill and the appropriate level of Bloom's Taxonomy to deliver the instruction. Teacher and principals should receive in-depth training to understand the skills, how to integrate the skills into daily instruction and to promote ongoing collaboration among all stakeholders. The skills Creativity and Innovation were perceived by elementary principals as not being embedded into the curriculum. Therefore professional development should be

conducted to determine and share the best practices for incorporating creativity and innovation into daily instruction.

The Division Leadership Team should provide 21st Century Learning curriculum teams to assist with implementing the skills and alignment of the written, taught, and assessed curriculum. Since, the research within this study indicated that direct instruction was the best way to support teachers, assuring the instruction is aligned is key. The written, taught and assessed must be in alignment. These teams should focus primarily on effective strategies to help teachers deliver lesson that require students to be creative and innovation, to be critical thinkers and communicate and collaborate effectively while learning the core content.

For Leaders of teacher preparation programs and principal preparation programs.

Leaders of Teachers and Principal Preparation Programs should provide professional development for teachers and principals on understanding and implementing 21st century skills. Professional Development programs for teachers should be centered on understanding and implementing 21st century skills. Just as teachers are learning about teaching the core subjects they should also learn about implementing and teaching the core subjects with a focus on implementing and teaching 21st Century Skills.

Leaders of Teacher Preparation and Principal Preparation Programs should provide opportunities for teaching 21st Century Skills and learning how to implement best practices to help students gain knowledge of the skills. Teacher preparation programs should include opportunities to teach 21st century skills. Teachers should be given the opportunity to practice writing lesson plans and teaching lessons to elementary students with the skills embedded into the curriculum. Teachers should be given the opportunity to assess the skills and be given feedback about their work. In addition this skill should be part of the graduation requirements for Virginia teachers.

Leaders of teacher preparation programs and principal preparation programs should provide principal leadership training on assisting teachers in implementing 21st Century Skills in elementary schools. Based on the research for this study, as the instructional leader and leader of the school, the principals will be responsible for leading the implementation and teaching of 21st century initiatives. University program leaders should provide training for principals on the best strategies to lead 21st century initiatives. Training should be provided throughout the Commonwealth to help Virginia principals in leading this change initiative. Strategies relating to

maintaining a positive climate while implementing skills to the best ways to monitor and implement the written, taught and assessed curriculum with newly embedded 21st century skills should be shared with administrators.

For State Policymakers

State Policy makers should embed 21st century skills into the Virginia Standards of Learning. While there has been an increase in rigor in the Virginia Standards of Learning, which may resemble 21st century skills, it is imperative that 21st century skills be deliberately identified and labeled as 21st century skills. Educators should know that the expectation is to prepare students for the future through understanding content knowledge and acquisition of these skills.

State policy makers should consider seeking a research-based organization to provide a systematic framework to lead the implementation of 21st century skills throughout the state. The implementation and teaching of 21st century skills should be systematic. It should not be approached mindlessly. Therefore a systematic framework should be implemented statewide to purposeful prepare our students for the future.

Suggestions for Further Study

Information gathered from this study revealed additional possibilities for research. The following recommendations are suggestions for future research**.**

1. To further understand the rate of embeddedness of 21st century skills into the existing curriculum, a study could be conducted with middle school principals in Virginia to determine their perceptions of implementing 21st century skills.
2. A qualitative study could be conducted with schools to examine the practices used to effectively implement 21st century skills in school where time was not an issue.
3. A study could be conducted to determine the level of achievement gained from embedding 21st century skills like Critical Thinking and Problem Solving into the curriculum.

4. A study could be conducted to determine if the reported level of importance of 21st century skills aligned with ratings of implementation. Are the skills that principals identified as being the most important actually being embedded into the curriculum, taught, and assessed in the classroom at the elementary level?

Reflections

I began this journey to determine which 21st century skills were important to elementary-age students. I wanted to know which 21st century skills previously identified by research at the secondary level and within our workforce, were really relevant and important for elementary-age students. More importantly, as a principal I wanted to assure that these skills were being implemented at the elementary schools in Virginia.

After meeting with my dissertation committee and completing my literature review, I determined that there was a gap in the literature at the elementary level. I wanted to explore this topic further. As I explored the methodology options, the opportunity to determine the best research approach proved to be both exciting and rewarding. However, the challenges associated with getting permission to conduct research gave me the gift of patience. I soon learned that this journey was a collaborative adventure that meant that I was no longer working at my pace, but at the pace of others and at their discretion. As a result, my patience grew and my sample population grew as well. I learned that perhaps starting with a wider population sample, and narrowing the field if necessary, might prove to be better option when gathering data in the future. The ability to be flexible and change direction was important. As a result of conducting the data analysis, I have gained valuable information for elementary age students. My findings revealed that 21st century skills were important and relevant at the elementary level; however, they are not perceived to be as embedded into the curriculum. This is important to educators who are striving to prepare our student for the future.

With the information learned about the importance, relevance and the rate of which 21st century skills are imbedded into the curriculum, I think educators in Virginia will be able to make changes to the curriculum, at the primary level, to begin preparation to help children become critical thinkers, creative, collaborators and great communicators as we build their knowledge base about the core academic subjects.

In addition to conducting research as a practitioner in the field, I have grown as a researcher and scholar as well. My research skills and in-depth study of 21st century skills in elementary schools have given me a knowledge base and findings to share with others. My research will help to fill a void in the existing research about elementary principals perceptions and 21st century skills.

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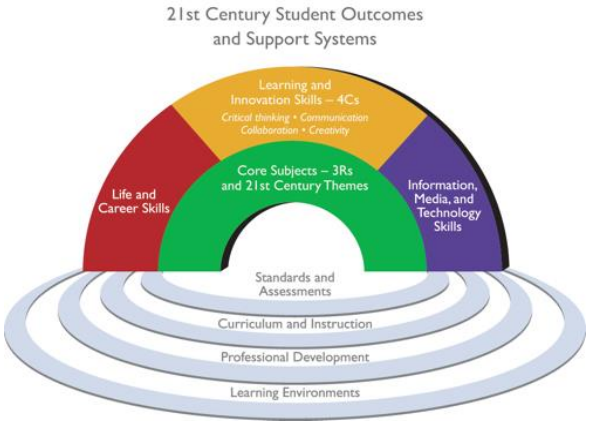
Appendix A

Partnership for 21st Century Skills Definitions Of Terms in Framework

Learning and
Innovation Skills – 4Cs
Critical thinking •
Creativity
Core Subjects – 3Rs
Themes



Communication Collaboration •

and 21st Century

Core Subjects and **21st Century Themes**

Mastery of core subjects and 21st Century Theme_is essential to student success. Core subjects include English, reading or language arts, world languages, arts, mathematics, economics, science, geography, history, government and civics.

In addition, schools must promote an understanding of academic content at much higher levels by weaving **21st century interdisciplinary themes** into core subjects:

- Global Awareness
- Financial, Economic, Business and Entrepreneurial Literacy
- Civic Literacy
- Health Literacy
- Environmental Literacy

Learning and Innovation Skills

Learning and innovation skills are what separate students who are prepared for increasingly complex life and work environments in today's world and those who are not. They include:

- Creativity and Innovation
- Critical Thinking and Problem Solving
- Communication and Collaboration

Information, Media and Technology Skills

Today, we live in a technology and media-driven environment, marked by access to an abundance of information, rapid changes in technology tools and the ability to collaborate and make individual contributions on an unprecedented scale. Effective citizens and workers must be

able to exhibit a range of functional and critical thinking skills, such as:

- Information Literacy
- Media Literacy
- ICT (Information, Communication, and Technology) Literacy

Life and Career Skills

Today's life and work environments require far more than thinking skills and content knowledge. The ability to navigate the complex life and work environments in the globally competitive information age requires students to pay rigorous attention to developing adequate life and career skills, such as:

- Flexibility and Adaptability
- Initiative and Self-Direction
- Social and Cross-Cultural Skills
- Productivity and Accountability
- Leadership and Responsibility

21ST CENTURY SUPPORT SYSTEMS

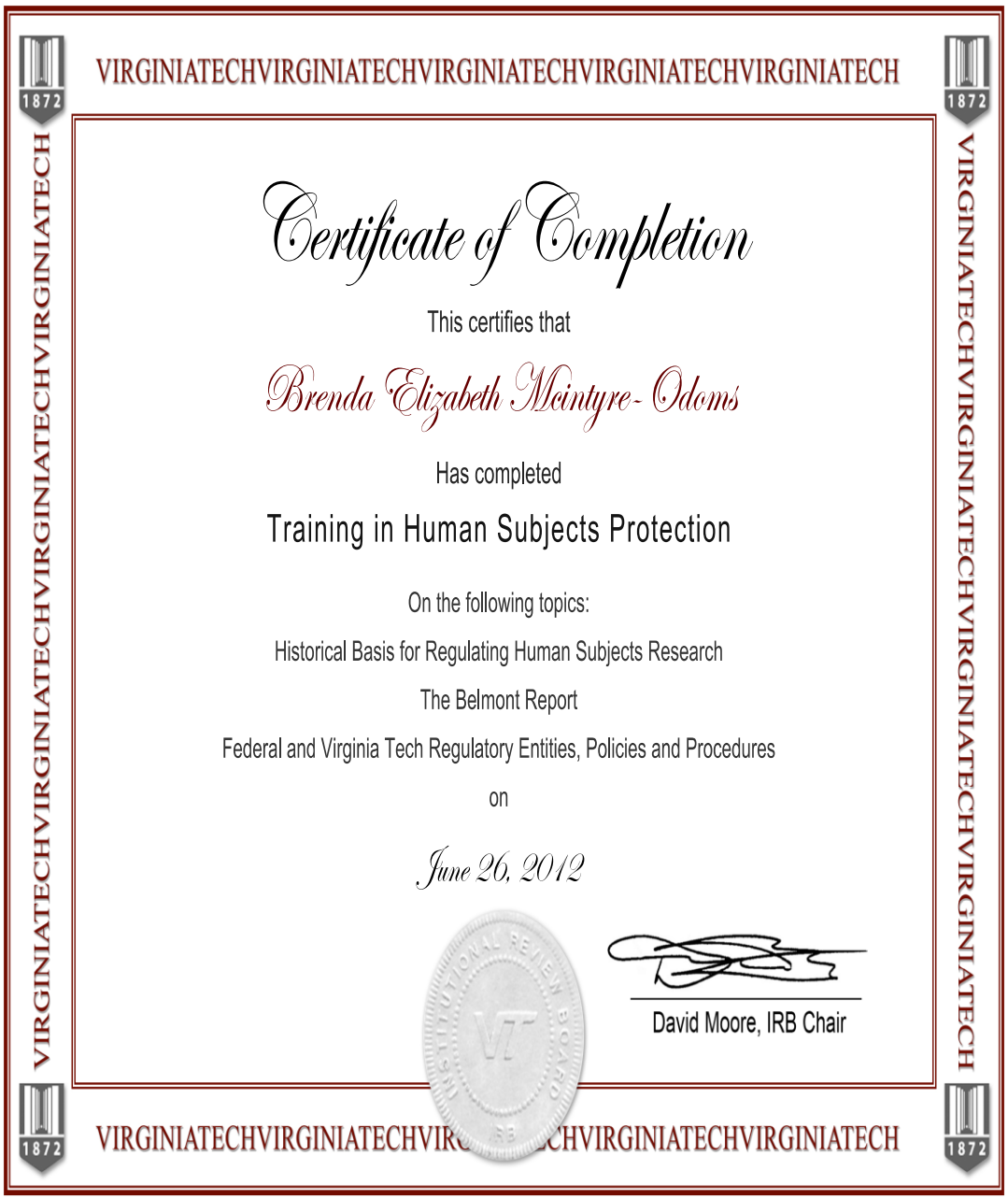
Developing a comprehensive framework for 21st century learning requires more than identifying specific skills, content knowledge, expertise and literacies. An innovative support system must be created to help students master the multi-dimensional abilities that will be required of them. The Partnership has identified five critical support systems to ensure student mastery of 21st century skills:

- 21st Century Standards
- Assessment of 21st Century Skills
- 21st Century Curriculum and Instruction
- 21st Century Professional Development
- 21st Century Learning Environments

For more information, visit the Partnership's website at www.p21.org

Appendix B

Certificate of Completion for Training in Human Subjects Protection



Appendix C

IRB Approval

VirginiaTech

Office of Research Compliance
Institutional Review Board
North End Center, Suite 4120, Virginia Tech
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-4606 Fax 540/231-0959
email irb@vt.edu
website http://www.irb.vt.edu

MEMORANDUM

DATE: October 8, 2014

TO: Carol S Cash, Brenda Elizabeth Mcintyre-Odoms

FROM: Virginia Tech Institutional Review Board (FWA00000572, expires April 25, 2018)

PROTOCOL TITLE: Elementary Principals' Perceptions of 21st Century Skills in Southeastern Virginia

IRB NUMBER: **14-668**

Effective October 8, 2014, the Virginia Tech Institution Review Board (IRB) Chair, David M Moore, approved the Amendment request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

http://www.irb.vt.edu/pages/responsibilities.htm

(Please review responsibilities before the commencement of your research.)

PROTOCOL INFORMATION:

Approved As:	**Exempt, under 45 CFR 46.110 category(ies) 2**
Protocol Approval Date:	**July 8, 2014**
Protocol Expiration Date:	**N/A**
Continuing Review Due Date*:	**N/A**

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Appendix D

Principal Letter to Participate in the Study

October 20, 2014

Dear Mrs. _____

As part of my doctoral studies at Virginia Polytechnic Institute and State University, I am researching elementary principals' perceptions of 21st Century Skills and their implementation in schools in Southeastern Virginia. Since you are presently an elementary principal, your participation will bring valuable insight to the practice and perceptions of principals as they lead their schools into the 21st Century and beyond.

I greatly appreciate your input provided by completing *The Survey of Elementary Principals' Perceptions of Implementing 21st Century Skills in Southeastern Virginia*, and it is anticipated that it will take approximately 10-15 minutes to complete. The survey uses rating scales to ask for your opinions and to capture perceptions. Open ended free response questions will be asked as well.

Please know your participation in the study is completely voluntary. Confidentiality will be protected, and anonymity is ensured, as you will NOT be asked to identify your name, the name of your school, nor the name of your division. However, for reporting purpose each school and division will be given a specific link. Data gathered from this survey will be presented in an aggregated format without individually identifiable information. As a result, there are minimal risks with participating in this study.

If you have read and completely understand the purpose of this study and your role as a participant, please click on the link to begin https://www.surveymonkey.com/s/S7XV9W2 Submission of the completed survey denotes your consent. Should you wish to discuss any aspects of this study, you may reach me at (757) 254-1347 or via email at beodoms1@vt.edu.

Again, thank you for participating in this survey. **Your response is respectfully requested within the next two weeks, by November 3, 2014.**

Sincerely,

Brenda McIntyre-Odoms
Brenda McIntyre-Odoms, Ed.S.

Appendix E

Reminder Letter to Participate in the Study

November 11, 2014

Dear Principal,

I am a doctoral candidate at Virginia Polytechnic Institute and State University. I recently sent you an email with a link to complete a survey for my dissertation research on elementary principals' perceptions of 21st Century Skills and their implementation in schools in Southeastern Virginia. I would like to thank those of you who have already taken the time to complete the survey.

Due to the blind nature of the survey results I cannot identify survey completers from those who have not completed it. I am asking those that have not completed the survey to log onto the link below and complete the survey. The survey is designed to take 10-15 minutes of your time.

https://www.surveymonkey.com/s/S7NPJZX

The study has been approved by the Virginia Tech Institutional Review Board (IRB). The IRB approval number is 14-668.

I sincerely appreciate your time. Feel free to contact me if you have any questions or concerns regarding the survey. The survey deadline has been extended. **Please complete the survey by November 17, 2014.**

Sincerely,

Brenda McIntyre-Odoms
Brenda McIntyre-Odoms

Appendix F

The Survey of Elementary Principals' Perceptions of Implementing 21st Century Skills

The Survey of Elementary Principals' Perceptions of Implementing 21st

Creativity and Innovation

1. Consider <u>CREATIVITY and INNOVATION</u> as a 21st Century Skill and answer the related questions. The concept is defined as follows:

- **Think creatively**
  - **Use a wide range of idea creation techniques**
  - **Create new and worthwhile ideas**
  - **Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts**
- **Work creatively with others**
  - **Develop, implement, and communicate new ideas to others effectively**
  - **Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work**
  - **Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas**
  - **View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes**
- **Implement innovations**
  - **Act on creative ideas to make a tangible and useful contribution to the field in which the innovation will occur**

	Not At All	Not Very	Somewhat	Very	No Opinion/Unsure
Rate its ***IMPORTANCE*** for elementary students	◯	◯	◯	◯	◯
Rate its ***RELEVANCE*** for elementary students	◯	◯	◯	◯	◯
Rate its ***EMBEDDEDNESS*** into curriculum and instruction in ***your*** elementary school setting	◯	◯	◯	◯	◯

The Survey of Elementary Principals' Perceptions

The Survey of Elementary Principals' Perceptions of Implementing 21st

Critical Thinking and Problem Solving

2. Consider <u>CRITICAL THINKING AND PROBLEM SOLVING</u> as a 21st Century Skill and answer the related questions. The concept is defined as follows:

- **Reason effectively**
  - **Use a various types of reasoning (inductive, deductive) as appropriate to the situation**
- **Use systems thinking**
  - **Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems**
- **Make judgments and decisions**
  - **Effectively analyze and evaluating evidence, arguments, claims and beliefs**
  - **Analyze and evaluate major alternative points of view**
  - **Synthesize and make connections between information and arguments**
  - **Interpret information and draw conclusions based on the best analysis**
  - **Reflect critically on learning experiences and processes**
- **Solve problems**
  - **Solve different kinds of non-familiar problems in both conventional and innovative ways**
  - **Identify and ask significant questions that clarify various points of view and lead to better solution**

	Not At All	Not Very	Somewhat	Very	No Opinion/Unsure
Rate its ***IMPORTANCE*** for elementary students	◯	◯	◯	◯	◯
Rate its ***RELEVANCE*** for elementary students	◯	◯	◯	◯	◯
Rate its ***EMBEDDEDNESS*** into curriculum and instruction in ***your*** elementary school setting	◯	◯	◯	◯	◯

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Communication and Collaboration

3. Consider <u>COMMUNICATION AND COLLABORATION</u> as a 21st Century Skill and answer the related questions. The concept is defined as follows:

- **Communicate Clearly**
  - **Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts**
  - **Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions**
  - **Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)**
  - **Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact**
  - **Communicate effectively in diverse environments (including multi-lingual)**
- **Collaborate with Others**
  - **Demonstrate ability to work effectively and respectfully with diverse teams**
  - **Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal**
  - **Assume shared responsibility for collaborative work, and value the individual contributions made by each team member**

	Not At All	Not Very	Somewhat	Very	No Opinion/Unsure
Rate its ***IMPORTANCE*** for elementary students	◯	◯	◯	◯	◯
Rate its ***RELEVANCE*** for elementary students	◯	◯	◯	◯	◯
Rate its ***EMBEDDEDNESS*** into curriculum and instruction in ***your*** elementary school setting	◯	◯	◯	◯	◯

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Ranking of 21st Century Skills

4. Please rank order the following 21st Century Skills in order from 1 (most) to 3 (least) based on their IMPORTANCE to elementary school students.

	1st - MOST important	2nd	3rd - LEAST important	N/A
Creativity and Innovation	◯	◯	◯	◯
Critical Thinking and Problem Solving	◯	◯	◯	◯
Communication and Collaboration	◯	◯	◯	◯

5. Please rank order the following 21st Century Skills in order from 1 (most) to 3 (least) based on their RELEVANCE to elementary school students.

	1st - MOST relevant	2nd	3rd - LEAST relevant	N/A
Creativity and Innovation	◯	◯	◯	◯
Critical Thinking and Problem Solving	◯	◯	◯	◯
Communication and Collaboration	◯	◯	◯	◯

6. Please rank order the following 21st Century Skills in order from 1 (most) to 3 (least) based on their EMBEDDEDNESS into curriculum and instruction in your elementary school.

	1st - MOST embedded	2nd	3rd - LEAST embedded	N/A
Creativity and Innovation	◯	◯	◯	◯
Critical Thinking and Problem Solving	◯	◯	◯	◯
Communication and Collaboration	◯	◯	◯	◯

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Prominence of 21st Century Skill Wording

7. Consider the following school documents. Check the box next to all documents in which 21st Century Skills are mentioned (specifically Creativity, Innovation, Critical Thinking, Problem Solving, Communication, or Collaboration):

- [ ] Your school website
- [ ] Your school blog(s)
- [ ] Your school newsletter(s)
- [ ] Your school brochures(s)
- [ ] Your school's mission or vision statement

Other (please specify)

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Supporting Teachers - Free Response

8. How, specifically, do you support teachers in addressing 21st century skills (defined as Creativity, Innovation, Critical Thinking, Problem Solving, Communication, and/or Collaboration)?

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How are 21st Century Skills being taught - Free Response

9. Specifically, how are teachers teaching 21st century skills (defined as Creativity, Innovation, Critical Thinking, Problem Solving, Communication, and/or Collaboration) in your school? Examples may include formal programs, as teachers wish and have interest, through themes we set as school, etc.

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Implementation Challenges - Free Response

10. What are the challenges related to implementing the teaching of 21st century skills (defined as Creativity, Innovation, Critical Thinking, Problem Solving, Communication, and/or Collaboration) in your schools?