Perceptions of School Leaders for One-to-One Device Implementation in K-5 Elementary Schools in One Division in Virginia

Crystal Wilkerson

Dissertation submitted to the faculty of the Virginia Polytechnic Institute & State University in partial fulfillment of the requirements for the degree of

Doctor of Education

in

Educational Leadership and Policy Studies

Ted S. Price, Chair
Carol C. Cash
Michael D. Kelly
Stacy J. Sedory

March 13, 2017
Blacksburg, Virginia

Keywords: one-to-one devices, principal leadership, device implementation, pedagogy
Perceptions of School Leaders for One-to-One Device Implementation in One K-5 Elementary School Division in Virginia
Crystal Wilkerson

ABSTRACT

New initiatives involving the use and implementation of technology are being put into place in many school systems across the country to help students acquire needed 21st century skills (Grady, 2011). The purpose of this study of the implementation of one-to-one devices was to examine school leaders’ perceptions of changes in their leadership practices, teachers’ instructional practices, and student engagement. A member of the central office staff and five elementary principals were asked to provide perceptions on the implementation process with their staff. School leaders also provided perceptions on how teachers were led to facilitate instruction while using devices.

This study consisted of an interview with five elementary principals as well as a member of the central office staff who oversaw implementation. The school leaders’ individual interview responses were analyzed and the data, based on their perspectives, were examined.

The results of this study indicated that student collaboration, student-centered learning, diverse learning needs of students, and students’ familiarity with technology were factors that influence students in a one-to-one device environment. Finding the right digital tool, instructional planning, teacher as facilitator, professional development, and parallel modeling and learning on behalf of the principal to all be important factors to consider for one-to-one device implementation. The results may influence the implementation of one-to-one technology programs for this and other school divisions as well as school leaders.
Perceptions of School Leaders for One-to-One Device Implementation in One K-5 Elementary School Division in Virginia
Crystal Wilkerson

GENERAL AUDIENCE ABSTRACT

The purpose of this study of the implementation of one-to-one devices was to examine school leaders’ perceptions of changes in their leadership practices, teachers’ instructional practices, and student engagement. A member of the central office staff and five elementary principals were asked to provide perceptions on the implementation process with their staff through individual interviews. School leaders also provided perceptions on how teachers were led to facilitate instruction while using technology devices. The school leaders’ individual interview responses were analyzed and the data, based on their perspectives, were examined.

The results of this study indicated that student collaboration, student-centered learning, diverse learning needs of students, and students’ familiarity with technology were factors that influence students in a one-to-one device environment. Finding the right digital tool, instructional planning, teacher as facilitator, professional development, and parallel modeling and learning on behalf of the principal to all be important factors to consider for one-to-one device implementation. The results may influence the implementation of one-to-one technology programs for this and other school divisions as well as school leaders.
Dedications

This journey is certainly not one that was accomplished alone. Without the daily love, support, and encouragement from my husband, Jeff Wilkerson, this would not have been possible. Taking our son to practices, cooking dinner nightly, and just the regular positive encouragement did not go unnoticed. Thank you for helping me be successful and being one of my biggest cheerleaders!

To my daughter, Brittany Wilkerson, all I have ever wanted was to encourage you to strive to be your best in everything you do. I hope this is in some small way a model for reaching for the stars. To my son, Evan Wilkerson, I want the exact same for you. Thank you for the occasional “I’m proud of you, mom” along the way. I love you both more than you’ll ever know!

My mom, Judy Lewis, you have supported me in everything I have ever done. You have always taught me that there is no limit to what I am capable of. My dad, Frank Lewis, I think this degree is for you. You are one of the smartest people I know, and I know you really wanted this for me. Thank you both for being great parents!

Along all of my journeys in life, God has always guided me in the right direction. Not to say that there weren’t obstacles along the way, but His lessons were in each one. This process was no exception.
Acknowledgements

I would like to thank my chair, Dr. Ted Price for your patience, guidance, and accessibility as I worked through the process to complete this dissertation. All of your breathing techniques and words of encouragement certainly were invaluable. Dr. Carol Cash, you have been someone who has been able to translate everything in terms that even I can understand and I am very appreciative. Dr. Michael Kelly, thank you for encouraging me to pursue this topic that I have grown so passionate about. Dr. Stacy Sedory, thank you for the reassurance that I would be able to accomplish this task. To my professional mentor, David French, I appreciate your leadership and guidance. To my cohort members, I am forever grateful for our bond that will hopefully last a lifetime. I am especially grateful for Felicia Barnett and Glenda Walter who were my go to partners during much of our coursework. Molly Sullivan and Lisa Perkins, I think I have spent more time with you two than anyone else over the last year. I would not be where I am on this journey without your friendship and support along the way. I’m forever grateful!
Table of Contents

ABSTRACT .............................................................................................................................................. ii
GENERAL AUDIENCE ABSTRACT ................................................................................................. iii
DEDICATIONS ........................................................................................................................................ iv
ACKNOWLEDGEMENTS ...................................................................................................................... v
TABLE OF FIGURES .......................................................................................................................... x
LIST OF TABLES ................................................................................................................................... xi

CHAPTER ONE INTRODUCTION ........................................................................................................ 1
  Overview of the Study .......................................................................................................................... 3
  Historical Perspective ........................................................................................................................... 3
  Statement of the Problem .................................................................................................................... 4
  Significance of the Study ..................................................................................................................... 5
  Purpose of the Study ............................................................................................................................ 7
  Justification of the Study .................................................................................................................... 7
  Research Questions .............................................................................................................................. 7
  Conceptual Framework ....................................................................................................................... 7
  Definition of Key Terms ...................................................................................................................... 10
  Limitations .......................................................................................................................................... 11
  Delimitations ....................................................................................................................................... 11
  Organization of the Study .................................................................................................................. 12

CHAPTER TWO LITERATURE REVIEW .............................................................................................. 13
  Purpose of the Literature Review ....................................................................................................... 13
  Search Process .................................................................................................................................... 13
  History of Public Education in the United States .............................................................................. 13
  History of the Use of Technology in Public Schools ........................................................................ 15
  Policy Makers at the Division Level .................................................................................................. 17
  Division Initiatives .............................................................................................................................. 18
  Implementation of New Initiatives ...................................................................................................... 18
  Educational Leadership ....................................................................................................................... 19
    School leadership .............................................................................................................................. 19
    Instructional leadership .................................................................................................................. 21
School culture. ................................................................................................................. 21
Parent and community involvement. ............................................................................. 22
Principal as digital leader. ............................................................................................. 22
Shared leadership. .......................................................................................................... 26
Professional development. ............................................................................................. 26
Support systems. ........................................................................................................... 27
Digital Learning Environment ....................................................................................... 27
  Instructional pedagogy. ................................................................................................. 28
  Personalized learning. ................................................................................................... 28
  Individualized devices. ................................................................................................. 29
Student Engagement with Technology .......................................................................... 29
Summary of the Literature Review ................................................................................ 30

CHAPTER THREE METHODOLOGY ........................................................................... 32
  Purpose of the Study ..................................................................................................... 32
  Research Design and Justification ................................................................................ 32
  Research Questions ....................................................................................................... 33
  Site and Sample Selection ............................................................................................. 34
  Data Procedures ............................................................................................................ 34
  Instrument Design & Validation .................................................................................... 35
  Data Treatment ............................................................................................................... 37
  Data Management ......................................................................................................... 37
  Methodology Summary ................................................................................................. 38

CHAPTER FOUR RESULTS OF THE STUDY ................................................................ 39
  Purpose of the Study ..................................................................................................... 39
  Background Information of Participating Schools ....................................................... 39
  Explanation of the Data .................................................................................................. 43
    Digital leadership. ........................................................................................................ 43
    Administrative leadership. ......................................................................................... 44
    Professional development. ......................................................................................... 44
    Supporting failure. ...................................................................................................... 45
    Administrative support. ............................................................................................... 45
Apprehensions .................................................................................................................. 46
Parents ................................................................................................................................. 46
Parallel modeling and learning .......................................................................................... 47
Instructional delivery .......................................................................................................... 48
Opportunities for instruction .............................................................................................. 48
Finding the right tool ............................................................................................................ 49
Instructional planning ......................................................................................................... 49
Teacher flexibility ................................................................................................................ 50
Small leaps forward .............................................................................................................. 50
A different way of teaching ................................................................................................. 50
Teacher as facilitator ............................................................................................................ 51
Impact on students ................................................................................................................ 52
Student collaboration .......................................................................................................... 52
Student-centered learning .................................................................................................... 52
Meeting the diverse learning needs of all students .............................................................. 53
Access to resources ............................................................................................................. 53
Students' familiarity with technology ................................................................................... 54
Emergent Themes ................................................................................................................ 55
Summary of the Data ............................................................................................................ 55
CHAPTER FIVE RESULTS OF THE STUDY ..................................................................... 57
Purpose of the Study .............................................................................................................. 57
Summary of Findings ............................................................................................................ 57
Finding One .......................................................................................................................... 57
Finding Two .......................................................................................................................... 58
Finding Three ....................................................................................................................... 58
Finding Four .......................................................................................................................... 59
Finding Five ........................................................................................................................... 60
Finding Six .............................................................................................................................. 60
Finding Seven ........................................................................................................................ 61
Finding Eight .......................................................................................................................... 61
Finding Nine ........................................................................................................................... 62
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implications of Findings</td>
<td>63</td>
</tr>
<tr>
<td>Implication One</td>
<td>63</td>
</tr>
<tr>
<td>Implication Two</td>
<td>63</td>
</tr>
<tr>
<td>Implication Three</td>
<td>63</td>
</tr>
<tr>
<td>Implication Four</td>
<td>64</td>
</tr>
<tr>
<td>Implication Five</td>
<td>64</td>
</tr>
<tr>
<td>Implication Six</td>
<td>64</td>
</tr>
<tr>
<td>Implication Seven</td>
<td>64</td>
</tr>
<tr>
<td>Implication Eight</td>
<td>65</td>
</tr>
<tr>
<td>Recommendations for Future Research</td>
<td>65</td>
</tr>
<tr>
<td>Conclusions</td>
<td>66</td>
</tr>
<tr>
<td>Reflections</td>
<td>67</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>68</td>
</tr>
<tr>
<td>APPENDIX A PERMISSION TO USE SURVEY QUESTIONS</td>
<td>74</td>
</tr>
<tr>
<td>APPENDIX B INSTITUTIONAL REVIEW BOARD CERTIFICATE</td>
<td>75</td>
</tr>
<tr>
<td>APPENDIX C INSTITUTIONAL REVIEW BOARD APPROVAL LETTER FROM UNIVERSITY</td>
<td>76</td>
</tr>
<tr>
<td>APPENDIX D SCHOOL DIVISION APPROVAL LETTER</td>
<td>77</td>
</tr>
<tr>
<td>APPENDIX E EMAIL TO PARTICIPATE IN THE STUDY</td>
<td>78</td>
</tr>
<tr>
<td>APPENDIX F CONSENT FORM</td>
<td>79</td>
</tr>
<tr>
<td>APPENDIX G PRINCIPAL INTERVIEW QUESTIONS</td>
<td>82</td>
</tr>
</tbody>
</table>
Table of Figures

Figure 1. Conceptual Framework ................................................................. 9
Figure 2. U.S. Department of Education's Goals and Recommendations to Educators for Technology ................................................................. 25
### List of Tables

Table 1  *Summary of Comparative Demographic Information* .............................................. 42  
Table 2  *Digital Leadership Theme Responses by Participants* ......................................... 48  
Table 3  *Instructional Delivery Theme Responses by Participants* ...................................... 52  
Table 4  *Impact on Students Theme Responses by Participants* .......................................... 54  
Table 5  *Emergent Themes* .................................................................................................. 55
Chapter One

Introduction

Today’s students must be taught needed 21st century skills to thrive in the future (Firmin & Genesi, 2013). Many of the current teaching practices are not adequately preparing students for post-graduation expectations from prospective employers (Whitby & Anderson, 2014). Across the nation, school divisions are working to prepare students for a digital world upon graduation where U.S. schools have historically fallen short (Jacobs, 2010). In turn, administrators and educators are charged with ensuring students are meeting the academic expectations and rigor set forth by their school division while incorporating technology as a tool to enhance student learning (Edwards, 2014; Sheninger, 2014; Thomas & Brown, 2011; Whitaker, Casas, & Zoul, 2015).

One-to-one computing initiatives are being implemented in both elementary and secondary schools to help ensure students have continuous exposure to technology applications linked to their personalized learning (Grady, 2011). Technology applications are those technology programs such as word processing programs or web browsers designed to assist students in their instructional efforts (Grady, 2011). West (2012) found that personalized learning, along with teacher guidance, allows flexibility for students to be in control of their learning pace and style, often assisted by multimedia and interactive instructional materials. According to Topper and Lancaster (2013), one-to-one computing initiatives address the lack of regular, sustainable access to technology to assist with expanding access to technology for students. Technology implementation requires school leaders to facilitate teachers’ understanding of device use through professional development and support for staff. Investing in school staff to cultivate growth and development of intentional instructional change is essential as not to miss opportunities to impact others when staff needs support most (Whitaker et al., 2015). Supports must be put in place to help bridge the gap from current instructional practices to the vision in which learning happens through inquiry with the aid of instructional technology (Nussbaum-Beach & Hall, 2012).

School leadership, as well as leadership from the central office, must make changes in their leadership practices to support a digital conversion program (Collins & Halverson, 2009). Edwards (2014) defines digital conversion as the transformation of instruction from paper-based
to a primarily digital platform. Administrators are encouraged to make modeling their own professional development a priority to help move their staff forward. Nussbaum-Beach and Hall (2012) stated, “Principals who understand how important it is for leaders to also take the posture of a learner develop leaders who more easily model and demonstrate respect, fairness, and equality and act as gate-openers to change” (p. 129).

Collins and Halverson (2009) identified digital resources as an array of technology-based supplements. Digital resources should be secured and provided to teachers in an ongoing process to inspire technology use and integration (Grady, 2011). Educational leaders must also allow time for collaboration and capacity building to improve established goals of personal growth and school improvement (Edwards, 2014). With digital resources in place, leaders can start to facilitate building the momentum for change.

Sheninger (2014) found that adopting the practice of comprehensive device implementation leads to paradigm shifts in the pedagogy of teaching and learning. Device implementation includes infusing 21st century technologies available for varied instructional delivery (West, 2012). Teachers must embrace new methods of student-centered learning where the teacher functions as a facilitator (Johnson & Maddux, 2003). Pedagogy should change the instructional design to provide a systematic approach with a set of contextualized practices, always adapting to circumstances (Beetham, 2013). Much like teaching and learning, technology is continuously evolving, so frequent changes are expected to occur in the pedagogy of instructional practices in the 21st century (Jacobs, 2010).

Administrators should see students who are actively and authentically engaged in the teaching and learning process after placing emphasis on pedagogy (Scheninger, 2014). Learning occurs through the interaction and participation with others in a back and forth relationship that is the result of shared interests and opportunities in the environment (Thomas & Brown, 2011). Jacobs (2010) noted that in a one-to-one digital learning setting, students are authentically engaged in personalized learning opportunities where students have control of their learning, yet are overseen by the teacher. Personalized learning systems where students collaborate with each other, participate in creating their instructional plans and engage with the learning community show considerable promise of educational attainment (West, 2012).
Overview of the Study

This basic qualitative study examined school leaders’ perceptions of the impact on student engagement from a one-to-one device initiative at a large school division in Virginia. Student engagement can be defined as capturing the attention of young people in a meaningful way (West, 2012). This study examined school leaders’ perceptions of the implementation process and changes in instructional pedagogy. The school division in this study chose K-5 elementary schools to participate in a pilot program implementing a one-to-one device initiative using a variety of digital devices during the 2015-2016 school year. Sheninger (2014) defines digital devices as the educational hardware being used by schools today. School leaders’ responses to open-ended questions posed during individual interviews generated data from five select elementary school principals that participated in the pilot program as well as one member of the central office staff.

Historical Perspective

Mondale and Patton (2001) found that prior to and during the 20th century the dominant pattern for teaching and learning experiences in elementary and secondary schools was a teacher-centered instructional model. This teacher-centered instruction meant teachers taught the information that they felt the students needed to learn through direct instruction, with no input from the students. Collins and Halverson (2009) stated that the pressure on schools to meet the increasing diversity of the population made teaching more difficult to use the same instructional strategies to teach all students.

In the early 1900’s, the inclusion of films in the classroom was considered a progressive teaching approach; this was the first use of technology in teaching (Cuban, 1985). The use of films in schools was quickly followed by the integration of radio through classroom broadcasting to enhance instruction, which began decades before World War II (Cuban, 1985). Cuban (1985) indicated challenges with equipment, reception, and lack of teacher interest caused educational radio use to fail to materialize.

Television became the next mode of instructional technology in classrooms during the 20th century. Johnson and Maddux (2003) suggested that the addition of television provided more choices and eliminated barriers of space and time, but assumed passive learning for students. Microcomputers were eventually introduced to the school setting in a variety of ways...
and uncertainty existed on how best to use the new technology, but the push was there by all stakeholders to implement the machines instructionally (Cuban, 1985).

One-to-one computing programs in schools first emerged in 1990 at a private girls’ school in Melbourne, Australia for fifth-grade students (Warschauer, 2006). This program was the first of its kind to provide laptops to students. More recent one-to-one computing programs seek to provide laptops and Internet access to students for use at home and school (Penuel, 2006). In 1997, more than one thousand U.S. schools participated in Microsoft Corporation's Anytime Anywhere Learning Program initiative with one-to-one computers for over five years. The outcomes from this program showed that many schools had difficulty remaining committed to the program over time (Warschauer, 2006).

Since the turn of the 21st century, the implementation of instructional technology occurred in various facets across the nation. The changes that were brought about in schools with the Internet allowed for accessibility of information technology to motivate and challenge students (Thomas & Brown, 2011). Firmin and Genesi (2013) noted that when focusing on the quality and quantity of digital devices used for instruction in combination with new pedagogies brought about by teachers, the outcome could be beneficial.

Eric Mazur, area Dean of Applied Physics at Harvard, followed by Sal Khan, led the charge of “flipped classrooms” by guiding students to their learning through creating, designing, problem-solving, synthesizing, and collaborating (Wagner & Dintersmith, 2015). The goals of this concept are to flip around instructional practices, so students watch lessons at home and bring their homework to school allowing teachers to serve as hands-on facilitators (West, 2012). Furthermore, the emergence of learning through blogs, social networks, and other media has shaped classroom opportunities for multiple perspectives about a given topic (Thomas & Brown, 2011). Digital transformation is ongoing, and progress has materialized in getting digital resources in the hands of students (Collins & Halverson, 2009).

**Statement of the Problem**

Today’s students are digital natives; however, few of the teachers who facilitate their learning would be classified as such (Whitaker et al., 2015). Many teachers are using outdated teaching methods, yet an expectation exists for student preparation in a forward-thinking society (Keengwe, Onchwari, & Wachira, 2008). Lim, Zhao, Tondeur, Chai, and Tsai (2013) suggest
that transformations in learning occur when there is a shift in the role of the teacher from the sole source of information to one that provides varying degrees of support for students, monitors their progress, and encourages reflection. This shift coupled with the accountability of education from all stakeholders calls for significant reform of instructional practices to meet the needs of 21st century learners (Sterrett, 2011).

School divisions everywhere are implementing digital conversion programs to meet the needs of the 21st century learner (Edwards, 2014). One-to-one device initiatives have transpired with a wide variety of approaches. Studies have looked at the execution of technology initiatives in addition to its impact on student achievement at varying levels (Penuel, 2006). A lack of research has been noted regarding implementation practices of one-to-one device initiatives at the elementary level, where teachers are not specific in content areas. Furthermore, much of the research currently available shows teachers’ perceptions of one-to-one computing learning environments (Hew & Brush, 2007). Insufficient research has addressed the perceptions of principals or central office leaders on device implementation, particularly at the elementary level.

**Significance of the Study**

Far too often students are entering the workforce after graduation unprepared for the work ahead (Prensky, 2001). According to Sheninger (2014), one reason for the lack of preparation of graduates is due to limited access to digital technology in the K-12 school experience. Students are coming to school being asked to power down from an outside environment where learning occurs anytime, anywhere, and where students regularly pursue knowledge in networked and collaborative ways (Nussbaum-Beach & Hall, 2012). West (2012) found that for schools to combat technological inadequacies that ultimately impact educational attainment, they must use technology not just to deliver the existing education paradigm, but also to use alternative approaches to instruction.

The International Society for Technology in Education's (ISTE) National Education Technology Standards for Administrators (NETSA) identified the skills and knowledge needed by school leaders to support digital-aged learning, create technology-rich learning environments, and lead the transformation of the educational landscape (ISTE, 2009). Technology is ever-evolving. Changing technology requires educational leaders to remain steadfast in the process so students can be internationally competitive.
The U.S. Department of Education’s Future Ready Learning: Reimaging the Role of Technology Education (2016), which replaces the National Education Technology Plan (NETP) previously in place, sets a vision inspired by technology for educational leaders. This plan provides goals and recommendations for implementation in the areas of teaching, assessment, learning, and leadership as a means of highlighting and guiding acute areas for targeted instruction. U.S. Department of Education’s Future Ready Learning: Reimaging the Role of Technology Education (2016) demonstrates the national need for continued growth in the field of education for students to use technology to support learning.

The Virginia Department of Education (VDOE) promotes, fosters, and develops strategies, solutions and policies in support of innovation in digital learning by being a national leader in technology use and offering a wide variety of initiatives (“VDOE,” n.d.). The VDOE ensures that the Standards of Learning (SOL) and curricula driving public education integrates educational technology led by the Educational Technology Plan for Virginia (“VDOE,” n.d.). This technology plan outlines the strategic direction for local educational technology planning while providing the flexibility to accommodate continuing changes, innovations, and emerging technologies (“VDOE,” 2015). Local school divisions are tasked with adhering to the goals and objectives defined by the VDOE to provide all students with equal access to educational technologies (“VDOE,” 2015).

In response to international, federal, and state accountability, school divisions around the world are implementing one-to-one device initiatives to meet the needs of the 21st century learner (Edwards, 2014). Unfortunately, the approach to these initiatives can be inconsistent (Topper & Lancaster, 2013). Administrators are left to figure out how best to implement these programs in schools, yet they have inadequate preparation (Sheninger, 2014). Inadequate preparation can lead to the program dissolving entirely or not implemented with fidelity. Grady (2011) found that professional development must be provided to staff based on their identified needs while the administration is present and active in the process. As additional school divisions across the globe implement one-to-one device initiatives, school administrators must be adequately prepared for accompanying challenges (Grady, 2011).
Purpose of the Study

The purpose of this study of the implementation of one-to-one devices was to examine school leaders’ perceptions of changes in their leadership practices, changes in teachers’ instructional practices, and changes in student engagement. A member of the central office staff and five elementary principals were asked to provide perceptions on the implementation process with their staff. School leaders also provided perceptions on how teachers were led to facilitate instruction while using one-to-one devices.

Justification of the Study

When adopting any new initiative, it is essential for school leaders to implement with fidelity by providing the support and professional development needed by the staff. Administrators themselves should be adequately prepared to provide necessary resources to teachers throughout the implementation process. School leaders have an obligation to be models throughout the digital transformation in a one-to-one device initiative that supports student achievement.

Research Questions

The research questions that follow guided this study.
1. What do school leaders perceive as changes to the way they lead when implementing a new one-to-one device initiative?
2. What do school leaders perceive as changes in the delivery of instruction when implementing a new one-to-one device initiative?
3. What do school leaders perceive as changes to student engagement as a result of implementing a new one-to-one device initiative?

Conceptual Framework

Collins and Halverson (2009) found that technology could enhance student learning through connecting and collaborating to create lifelong learning. Nationally, schools are being challenged by their central office to use technology-supported learning opportunities for all students to enhance student engagement (Sheninger, 2014). After being tasked to by the division, the conceptual framework suggests that administrators can lead their staff through
implementation of a one-to-one instructional delivery model. While leading staff through this endeavor can be exciting for some administrators, converting to digital teaching and learning can require a paradigm shift for other leaders where on-going professional development is essential (Grady, 2011). The influence of the changed leadership practices will, in turn, change the instructional pedagogy. Thomas and Brown (2011) propose instructional pedagogy must reflect the new culture of learning to keep up with our rapidly changing world. In the end, as illustrated in the bottom portion of Figure 1, the potential result is students will become more engaged in their daily learning. Although this study did not look at how increased student engagement impacts student achievement, the goal would be for student achievement to improve as an outcome.
Focus of the Study

Technology used as a tool to enhance student learning

Division initiative for one-to-one devices in elementary schools

School leaders charged with implementation of one-to-one initiative

Changes in leadership practices

Changes in instructional pedagogy

Changes in student engagement

Improved student achievement

*Figure 1.* Conceptual framework for the implementation of one-to-one device initiatives that provides an overview of this study.
Definition of Key Terms

The following key terms were used throughout this study and are defined to help facilitate understanding.

21st Century skills. 21st Century skills can be defined as classroom activities where acquisition of active learning, integrated and interdisciplinary curriculum, and project-based and problem-based learning are supported (Grady, 2011).

Digital natives. Digital natives can be defined as native speakers of the digital language of computers, video games, and the Internet that were born or brought up during the age of digital technology (Prensky, 2001).

Instructional technology. Instructional technology can be defined as digital media that provides access to a rich source of information through engagement (Thomas & Brown, 2011).

One-to-one computing initiative. One-to-one computing initiative addresses the lack of regular, sustainable access to technology so that expanded access to technology is available to students (Topper & Lancaster, 2013).

Pedagogy. Pedagogy refers to the roles of teachers and learners, the relationship between them, and the kinds of teaching and learning activities in which they engage (Jaffer, 2010).

Personalized learning. Personalized learning, along with teacher guidance, allows flexibility for students to be in control of their learning pace and style, often assisted by multimedia and interactive instructional materials (West, 2012).

Stakeholders. Stakeholders are an individual or group of people with similar interests in the success of an organization in fulfilling its mission (Paine & McCann, 2009).

Student engagement. Student engagement is capturing the attention of young people in a meaningful way (West, 2012).

Technology integration. Technology integration can be defined as meaningful, consistent use of technology where the curriculum drives the technology (Keengwe et al., 2008).

Title I School. A Title I school can be defined as one that is provided financial assistance from the federal government when the school has a high percentage of students from low-income families to help ensure that all children meet challenging state academic standards (Title I LEA Grants, 2015)
Limitations

This study examined the implementation of a new one-to-one device initiative in a large school division in Virginia. The following were limitations of which the researcher did not have control when determining the boundaries of the study:

1. A potential bias existed on the part of the researcher. She was employed as an assistant principal by the school division at one of the targeted schools of the study during the implementation of the initiative. The researcher assumed that the responses of the participants were honest and accurate.
2. The researcher assumed that all requests would be honored for an interview for the study; however, the number of participants could not be guaranteed.
3. Since the respondents worked for the school division implementing the one-to-one device initiative, results from their responses could be biased.
4. The targeted school division used a variety of devices during the implementation of the initiative.

Delimitations

The following were delimitations of which the researcher did have control when determining the boundaries of the study:

1. The study was limited to one large school division in Virginia. It does not represent the experiences of other school divisions.
2. While there are 55 elementary schools in the division, only those elementary schools that completed the first year of the one-to-one device initiative were included in this study.
3. One elementary school that participated in the first year of the one-to-one device initiative was excluded from the study because that principal only served a portion of the school year.
4. The study focused only on the perceptions of the school leaders who implemented the initiative and did not consider the perceptions of the teachers or students.
Organization of the Study

This study included five chapters. Chapter One provided an introduction containing background information, statement of the problem, significance of the study, purpose of the study, research questions, conceptual framework, definition of terms, limitations, and delimitations. Key components of the central framework in this chapter are technology used as a tool to enhance student learning, division initiative for one-to-one devices in elementary schools, schools charged with implementation of the one-to-one device initiative, changes in leadership practice, changes in instructional pedagogy, increased student engagement, and improved student achievement. In Chapter Two, the review of literature begins with the history of public education in the United States followed by the history of the use of technology in public schools. Chapter Two explains educational leadership practices and division initiatives, school leadership and culture, and parent and community involvement. This chapter describes the principal as an instructional and digital leader, shared school leadership, implementation of new initiatives, teaching and learning practices through technology, professional development and support systems, instructional pedagogy, and the digital learning environment for students. Chapter Two concludes with personalized learning, individualized devices, and student engagement with technology. Chapter Three describes the methodology that was used to complete this study. The methodology includes the research design and justification, research questions, site and sample selection, data procedures, instrument design and validation, and data treatment and management. Chapter Four reports and discusses the results related to the study, and Chapter Five includes a discussion of the findings, implications, recommendations for future research, and reflections on the study.
Chapter Two
Literature Review

Purpose of the Literature Review

The purpose of this literature review was to examine the current research that exists regarding the role of educational leaders when bringing about the implementation of a one-to-one device initiative and its impact on pedagogy and student engagement. Perceptions of school leaders, who have participated in one-to-one device initiatives, as well as experts from the field, were analyzed in the reviewed research. This literature review included identification of themes or gaps in the body of research relating to technology and education.

Search Process

A variety of search methods were used to gather data from the available academic literature comprehensively. This review of research was primarily conducted using the Virginia Polytechnic Institute and State University’s online library search engine, Summon, to gain access to scholarly literature, which included but was not limited to books, scholarly journal articles, and published dissertations.

The focus of the search began with the use of broad key search terms such as 1:1 devices in schools, digital conversion, leadership and initiative implementation, and digital leadership, which yielded approximately 982,212 results. The search was then narrowed to include terms such as instructional leaders in schools and new initiatives, the principal's role in student engagement, and leading technology in schools. Search limitations included those publications since 2002 and those that were available in full-text format among articles from scholarly publications, which yielded approximately 639 results. Furthermore, references from other researchers’ work were also used as a resource in gaining additional reference materials for this study.

History of Public Education in the United States

Public education began in the United States in 1635 (“American Public Education,” 2013). The first appearance of public schools to emerge was the Boston Latin School, founded by colonists who felt that teaching reading and writing at home and church was unsatisfactory (“American Public Education,” 2013). The founders of this school structure called this
educational setting the *common school* where Whites attended a public-funded, state-regulated institute (Mondale & Patton, 2001). Unlike today, the initial focus of the common school of that period was more of an emphasis on moral education over academic concerns (Goldstein, 2014). Previously, the delivery of instruction was primarily a one-room schoolhouse; however, educators like Horace Mann of Massachusetts introduced the concept of “age grading” of students in 1848, which eventually became the norm of instructional delivery (“American Public Education,” 2013). Age grading allowed students to be separated by their age into independent classes.

Throughout the 20th century, public education became far more complex than in previous years. In the early 20th century, as long as the schools were considered equal, schools were segregated by the race of students until the 1954 Supreme Court ruling in Brown v. Board of Education (“American Public Education,” 2013). This Supreme Court decision deemed separate was inherently unequal, which in turn provided educational opportunities for females, students with disabilities, and other ethnic groups such as Mexican Americans (Mondale & Patton, 2001). A decade of massive resistance followed, but the Elementary and Secondary Education Act (ESEA) of 1965 was put in place to ensure that equal opportunities were afforded to disadvantaged students by providing resources to eliminate economic disparities (Rossell, Armor, & Walberg, 2002). The ESEA was reauthorized and became known as the No Child Left Behind Act (NCLB) in 2001, which focused on closing achievement gaps by setting academic expectations based on standards with increased accountability for teachers and school leaders (NCLB, 2001). The goal was to focus on schools holistically, including those that were historically underperforming, rather than focusing on teachers individually, all the while ensuring that teachers were highly qualified and certified (Goldstein, 2014).

In the latter part of the 20th century, the emergence of two items redefined how people thought, communicated, and worked: the personal computer and the World Wide Web (Gura & Percy, 2005). These also began to redefine the expectations of teaching and learning. As a result, an explosion of technological tools and advancements occurred. Despite these improvements, the structure of education has changed very little since the inception of the common school (Niederhauser, 2010). Computer use began to increase in schools, but its primary purpose was word processing tasks for teachers and students (Cuban, Kirkpatrick, & Peck, 2001).
History of the Use of Technology in Public Schools

Mondale and Patton (2001) found that prior to and during the 20th century, the dominant pattern for teaching and learning experiences in elementary and secondary schools was a teacher-centered instructional model. Teacher-centered instruction meant teachers taught the information that he/she felt the students needed to learn through direct instruction, with no input from the students. Students had rules and directions that were strictly followed to maintain order and compliance in the schoolroom (Mondale & Patton, 2001). Collins and Halverson (2009) stated that the pressure on schools to meet the increasing diversity of the population made teaching more difficult to use the same instructional strategies to teach all students.

In the early 1900’s, the inclusion of films in the classroom was considered a progressive teaching approach; this was the first use of technology in teaching (Cuban, 1985). Cuban (1985) found that although it was difficult to track the frequency of film use in the classroom, numerous studies proclaimed films consistently motivated students to learn. The use of films in schools was quickly followed by the integration of radio through classroom broadcasting to enhance instruction, which began decades before World War II (Cuban, 1985). Cuban (1985) indicated challenges with equipment, reception, and lack of teacher interest caused educational radio use to fail to materialize.

Television became the next mode of instructional technology use in classrooms during the 20th century. Johnson and Maddux (2003) suggested that the addition of television provided more choices and eliminated barriers of space and time, but assumed passive learning for students. Microcomputers were eventually introduced to the school setting in a variety of ways and uncertainty existed on how best to use the new technology, but the push was there by all stakeholders to implement the machines instructionally (5, 1986). Jobrack (2012) reported, “Between 1983 and 1995, the ratio of computers to students in schools changed from [one] computer to each 125 students to [one] computer for each [nine] students” (p. 107).

One-to-one computing programs in schools first emerged in 1990 at a private girls’ school in Melbourne, Australia for fifth-grade students (Warschauer, 2006). One-to-one computing programs seek to provide laptops and Internet access to students for use at home and school (Penuel, 2006). For this program, the parents purchased the laptops, and the successful use of laptops spread thereafter throughout Australia. In 1997, more than one thousand U.S. schools participated in Microsoft Corporation's Anytime Anywhere Learning Program initiative.
with one-to-one computers for over five years. This initiative was a partnership with the school divisions and parents to share the costs associated with laptop adoption. The outcomes from this study showed that many schools had difficulty remaining committed to the program over time (Warschauer, 2006).

Since the turn of the 21st century, the implementation of instructional technology occurred in various facets across the nation. Instructional technology can be defined as hardware or software, which includes but is not limited to laptops, iPads, interactive boards, projectors, digital cameras, Internet, word processing software, and presentation software that are used to enhance instruction. The shift began with the historical perspective of schools producing "knowledge workers" who had specific content knowledge and continued to those that can derive multiple creative perspectives, yet schools remained stuck in time (Wagner & Dintersmith, 2015).

The changes that were brought about in schools with the Internet allowed for accessibility of information technology to motivate and challenge students (Thomas & Brown, 2011). Schools were adopting technological tools, but these tools were not used for technology-enhanced teaching and learning (Khan, 2012). Firmin and Genesi (2013) noted that when focusing on the quality and quantity of digital tools used for instruction in combination with new pedagogies brought about by teachers, the outcome could be beneficial. In other words, the use of digital resources must be used as a tool to enhance instruction as opposed to planning instruction around the technology.

Eric Mazur, area Dean of Applied Physics at Harvard, followed by Sal Khan, led the charge of “flipped classrooms” by guiding students to their learning through creating, designing, problem-solving, synthesizing, and collaborating (Wagner & Dintersmith, 2015). The goals of this concept are to flip around instructional practices, so students watch lessons at home and bring their homework to school allowing teachers to serve as hands-on facilitators (West, 2012). Furthermore, the emergence of learning through blogs, social networks, and other media has shaped classroom opportunities for multiple perspectives about a given topic (Thomas & Brown, 2011). Jacobs (2010) identified digital social networking as the biggest game changer in teaching and learning.

Although there has been progress in getting more digital resources in the hands of students, forward progress needs to continue. A more recent ratio around the country is
approximately five students per computer, and the ratio of about 9:1 in urban divisions (Collins & Halverson, 2009). This ratio means that students are still unable to take full advantage of technological enhancements to their learning. To meet the diverse learning needs in today's technological age, access to hardware, software, and connectivity; educators who know how to use technology; and leaders who have a vision of educational technology potential and can implement that knowledge in schools is essential (Johnson & Maddux, 2003).

**Policy Makers at the Division Level**

According to Mondale and Patton (2001), the policies brought on by NCLB had the best intentions for students meeting academic performance proficiency goals. On December 10, 2015, President Obama signed the Every Student Succeeds Act (ESSA), a new education law that redefined and replaced NCLB (ESSA, 2015). The ESSA (2015) intends to continue requiring a high level of accountability for student outcomes, while it places flexibility in the hands of states to create rigorous and comprehensive state-developed plans to close achievement gaps and increase outcomes for all students. These policies will likely lead to additional division-level policies that can impact the implementation of programs as the U.S. Department of Education works with states and divisions to begin its implementation (ESSA, 2015).

Stakeholders are charging individual school divisions with the task of developing and implementing policies that have shared ownership. Durlak and DuPre (2008) did a meta-analysis on the implementation of programs and found, “Social policy is important for institutionalizing new procedures and practices, and supporting an administrative and financial infrastructure” (p. 336). Durlak and DuPre (2008) also concluded that policies such as NCLB could help or hurt program implementation, depending on the perception of a new program’s impact on students’ academic performance.

In a yearlong case study conducted by Hubbard, Datnow, and Pruyn (2013), a U.S. elementary school used data as its platform for education reform while responding to policy demands placed by government agencies. Hubbard and colleagues’ (2013) findings indicated that when policy dictates educators to implement initiatives but lacks the knowledge and a strong rationale, the result is a fragmented curriculum with incoherence.

Lim et al. (2013) examined some gaps in technology trends and use in schools and recommended engaging teachers and other policy actors within the academic community in the
development of technology policy planning to close some of these gaps. Penuel (2006) compiled a research synthesis and cautioned division policymakers to use existing research on one-to-one initiatives, as it is likely to encounter a choice between funding different compelling kinds of programs for students. There is more to consider than technology when education leaders make decisions for schools and students. As stated by Leithwood and Janzi (2008),

In responding to demands that they focus sharply on improving their teachers’ instructional capacities, school and division leaders should not overlook the influence they have on classroom practice through their efforts to motivate their teachers and to align their teachers’ work settings with what is known about effective instructional practice. (p. 24)

Division Initiatives

Whitaker (2012) found that divisions have implemented various initiatives such as back to the basics whole language, one-to-one technology, direct instruction, assertive discipline, response to intervention, open classrooms, the Baldridge model, professional learning communities, state standards, missions statements, goal setting, and site-based management. Pros and cons exist for each initiative; however, it is people not the programs that determine the quality of a school (Whitaker, 2012). Additionally, when divisions embark on new initiatives, limitations should be placed on the number of educational programs that begin simultaneously, as well as make sure that the initiatives are not contradictory to one another (Sterrett, 2011).

Implementation of New Initiatives

The implementation of new programs in schools impacts the overall success of initiatives. A research review completed by Durlak and DuPre (2008) concluded,

Data from nearly 500 studies evaluated in five meta-analyses indicates that the magnitude of mean effect sizes are at least two to three times higher when programs are carefully implemented and free from serious implementation problems than when these circumstances are not present. (p. 340)
Furthermore, Sterrett (2011) found that an abundance of time is spent by division leaders when developing visions into realities before implementation, often bringing in outside consultants for assistance.

Historically across the nation, when adopting a digital conversion initiative, strict use policies were in place for students having and using their devices, but relinquishing a certain level of control, and giving of trust must ensue for a successful transition towards one-to-one device implementation to occur (Sheninger, 2014). According to Sheninger (2016), the main role of the leader in the school is to create an environment that fosters change. In a school implementing a digital transformation, it is the leaders’ responsibility to remove obstacles and challenges to clear a path for those that will be employing the technology use in the classroom (Sheninger, 2016).

**Educational Leadership**

Division level leaders must chart the course for schools by using data collection and reflection to gain insights to lead to student achievement (Blink, 2007). Knapp, Honig, Plecki, Portin, and Copland (2014) found for division central offices to lead learning-focused partnerships, relationships must be built with principals to strengthen their capacity towards overall improved instruction. Moreover, Leithwood and Jantzi (2008) performed a study which looked at 96 principals and 2,764 teacher responses along with student achievement data in language arts and math over three years to see if there was an indirect influence on student learning based on division contributions to school leader efficacy. Leithwood and Jantzi (2008) reported an empirical association with improvements in student learning when a division-wide focus on student achievement and the quality of instruction with the use of data transpired.

**School leadership.** In 2015, the Professional Standards for Educational Leaders, formally known as Interstate School Leaders Licensure Consortium (ISLLC) Standards, revealed research-based, best practice connections between educational leaders and student learning (CCSSO, 2015). Each standard explained the work of effective educational leaders as those that:

**Standard 1.** develop, advocate, and enact a shared mission, vision, and core values of high-quality education and academic success and well-being of each student;
Standard 2. act ethically and according to professional norms to promote each student’s academic success and well-being;

Standard 3. strive for equity of educational opportunity and culturally responsive practices to promote each student’s academic success and well-being;

Standard 4. develop and support intellectually rigorous and coherent systems of curriculum, instruction, and assessment to promote each student’s academic success and well-being;

Standard 5. cultivate an inclusive, caring and supportive school community that promotes the academic success and well-being of each student;

Standard 6. develop the professional capacity and practice of school personnel to promote each student’s academic success and well-being;

Standard 7. foster a professional community of teachers and other professional staff to promote each student’s academic success and well-being;

Standard 8. engage families and the community in meaningful, reciprocal, and mutually beneficial ways to promote each student’s academic success and well-being;

Standard 9. manage school operations and resources to promote each student’s academic success and well-being; and

Standard 10. act as agents of continuous improvement to promote each student’s academic success and well-being. (CCSSO, 2015)

School administrators should consider the standards’ insight when implementing one-to-one device initiatives for students to help enhance effectiveness.

Leading the charge for one-to-one device initiatives can come with a unique set of challenges beyond what a traditional school leader would encounter. As Arney (2014) stated,

We look for a school leader who is interested in doing this work, has the resiliency to withstand the initial technology speed bumps (or worse!), and can remain focused on the instructional problem they’re ‘hiring’ blended learning to help solve. (p. 47)

Additionally, Lim et al. (2013) found that even in situations where a technology project has been successful; policies, software and hardware, as well as technical support needs to be updated to continue successful implementation. Providing these necessary technology supports depends on
strong school leadership (Lim et al., 2013). By using the information on where a school is, where it wants to go, and modeling and integrating technology systematically, the school leader can serve as a tech-savvy model to the community (Sterrett, 2011).

**Instructional leadership.** Educational leadership includes a skillset relating to instructional leadership. In a study conducted by MetLife Survey of the American Teacher (2006), survey outcomes showed that 87 percent of highly satisfied teachers say that the principal providing direction for the school is crucial. Furthermore, the study also found that when analyzing 77 percent of administrators’ time, their time was spent guiding and motivating teachers (33%), reporting and compliance issues (24%), and handling discipline (20%).

Moreover, Blink (2007) found that sound instructional leadership begins with using data to create a calculated and meticulous process that drives instructional decisions. From this, Blink (2007) discovered that data collection, data reflection, data translation, instructional design, feedback, assessments and goal setting are all ways in which administrators can exemplify instructional leadership. School improvement happens when the principal is out of the office, observing in classrooms, and having ongoing conversations about good teaching (Wagner, 2006).

**School culture.** Educational leadership includes providing a school culture that positively impacts student achievement. In a meta-analysis study spanning a 30-year period, McREL identified 21 principal leadership responsibilities, including school culture, which was significantly associated with student achievement (Waters, Marzano, & McNulty, 2003). Leading by creating a vibrant and joyful culture provides an environment where teachers are more willing to be held accountable and more willing to provide the grit that makes a school work because there is a level of respect, trust, and appreciation for their hard work (Bambrick-Samtoyo & Peiser, 2012). Additionally, the research of Whitaker et al. (2015) found,

> Educators who make the biggest difference in the lives of students with whom they interact are likely the ones who have established the most positive relationships— not only with the students themselves, but also with the other educators to whom they are connected within and beyond the walls of the school(s) they serve. (p. 80-81)

Whitaker (2012) stated that school culture could take from three to nine years to bring about substantive change; however, when purposeful and persistent, a difference can happen in a
remarkably short time. In short, school leaders create a culture of trust in schools, which is what drives a successful school (Tschannen-Moran, 2004).

**Parent and community involvement.** Since the goal of every educational community is to advance student knowledge through teaching and inquiry, the use of the collective input contributes to the success of all (Strike, 2007). The research of Arney (2014) recommended that by engaging your school community’s input through interviews and dialogue, everyday needs and trends would be uncovered organically by different stakeholders’ contributions, which would provide buy-in and direction. To foster student achievement and prepare their citizenship, principals and teachers need to build trusting relationships with students and parents (Tschannen-Moran, 2004).

School administrators’ communication can help connect parents and the community with the school. Parents and the community can learn about the school’s digital footprint by administrators sharing the greatness of students and faculty using external technology communication (Anderson, 2014). Moreover, parent/teacher organizations together with business and community leaders should work closely to provide moral, financial, and organizational support to send a message of a united front to students, teachers, and all employees (Edwards, 2014).

**Principal as digital leader.** For administrators to be able to do a comprehensive technology evaluation and to know if their teachers are effectively using technology, school and division leaders need to understand the technology themselves (Anderson, 2014). As described by Castellon (2007), “Effective leadership in schools is needed to perpetuate deep problem solving and to change from what has been done in the past to what needs to be accomplished for the future” (p. 26). The research of Grady (2011) found that principals as technology leaders must set visions and goals for the school, model the use of technology, showcase technology use, provide on-going professional development opportunities, and secure resources to support the integration of technology.

As identified by ISTE’s NETSA, school leaders need the skills and knowledge to support digital-aged learning, create technology-rich learning environments, and lead the transformation of the educational landscape (ISTE, 2009). The ISTE (2009) standards affirm that administrators should provide:
1. Visionary leadership with a shared vision of comprehensive integration of technology to promote excellence and support transformation throughout the organization;

2. Digital age learning culture created, nurtured, and sustained to provide a rigorous, relevant, and engaging education for all students;

3. Excellence in professional practice that is promoted through an environment of professional learning and innovation that empowers educators to enhance student learning through the infusion of contemporary technologies and digital resources;

4. Systemic improvement of the organization through digital age leadership and management with effective use of information and technology resources; and

5. Digital citizenship practices of social, ethical, and legal issues and responsibilities related to a progressing digital culture are modeled.

Administrators should also be familiar with the U.S. Department of Education’s Future Ready Learning: Reimagining the Role of Technology Education (2016) which replaces the National Education Technology Plan (NETP) that was previously in place. This teaching, assessing, learning, and leadership plan sets a vision inspired by technology for educational leaders as outlined in Figure 2.
### Teaching: Teaching with Technology

**Goal:** Educators will be supported by technology that connects them to people, data, content, resources, expertise, and learning experiences that can empower and inspire them to provide more effective teaching for all learners.

**Recommendations:**

1. Provide pre-service and in-service educators with professional learning experiences powered by technology to increase their digital literacy and enable them to create compelling learning activities that improve learning and teaching, assessment, and instructional practices.

2. Use technology to provide all learners with online access to effective teaching and better learning opportunities with options in places where they are not otherwise available.

3. Develop a teaching force skilled in online and blended instruction.

4. Develop a common set of technology competency expectations for university professors and candidates exiting teacher preparation programs for teaching in technologically enabled schools and post-secondary education institutions.

### Assessment: Measuring for Learning

**Goal:** At all levels, our education system will leverage the power of technology to measure what matters and use assessment data to improve learning.

**Recommendations:**

1. Revise practices, policies, and regulations to ensure privacy and information protection while enabling a model of assessment that includes ongoing gathering and sharing of data for continuous improvement of learning and teaching.

2. States, districts, and others should design, develop, and implement learning dashboards, response systems, and communication pathways that give students, educators, families, and other stakeholders timely and actionable feedback about student learning to improve achievement and instructional practices.

3. Create and validate an integrated system for designing and implementing valid, reliable, and cost-effective assessments of complex aspects of 21st-century expertise and competencies across academic disciplines.

4. Research and development should be conducted that explores how embedded assessment technologies such as simulations, collaboration environments, virtual worlds, games, and cognitive tutors can be used to engage and motivate learners while assessing complex skills.

### Learning: Engaging and Empowering Learning Through Technology

**Goal:** All learners will have engaging and empowering learning experiences in both formal and informal settings that prepare them to be active, creative, knowledgeable, and ethical participants in our globally connected society.
### Recommendations:

1. States, districts, and post-secondary institutions should develop and implement learning resources that embody the flexibility and power of technology to create equitable and accessible learning ecosystems that make learning possible everywhere and all the time for all students.

2. States, districts, and post-secondary institutions should develop and implement learning resources that use technology to embody design principles from the learning sciences.

3. States, districts, and post-secondary institutions should take inventory of and align all learning technology resources to intended educational outcomes. Using this inventory, they should document all possible learner pathways to expertise, such as combinations of formal and informal learning, blended learning, and distance learning.

4. Education stakeholders should develop a born accessible standard of learning resource design to help educators select and evaluate learning resources for accessibility and equity of learning experience.

### Leadership: Creating Culture and Conditions for Innovation and Change

**Goal:** Embed an understanding of technology-enabled education within the roles and responsibilities of education leaders at all levels and set state, regional, and local visions for technology in learning.

**Recommendations:**

1. Establish clear strategic planning connections among all state, district, university, and school levels and how they relate to and are supported by technology to improve learning.

2. Set a vision for the use of technology to enable learning such that leaders bring all stakeholder groups to the table, including students, educators, families, technology professionals, community groups, cultural institutions, and other interested parties.

3. Develop funding models and plans for sustainable technology purchases and leverage openly licensed content while paying special attention to eliminating those resources and tasks that can be made obsolete by technology.

4. Develop clear communities of practice for education leaders at all levels that act as a hub for setting a vision, understanding research, and sharing practices.


In Virginia, an addendum to the Educational Technology Plan for Virginia: 2010-2015 was created for the 2015-2017 school years. Initially put into action for the 2003-2009 school years, this revised plan incorporated technology based on technological advancements to prepare students for the rapidly changing world. The VDOE (n.d.) has redeveloped a conceptual
framework to address the goals of Information and Communication Technologies (ICT) literacy with five focus areas

- accountability;
- support;
- professional development;
- curriculum; and
- 21st century learning and greater academic achievement.

**Shared leadership.** Shared leadership can be defined as teachers’ influence over, and participation in, the decisions that are made for the school alongside the principal (Leithwood & Jantzi, 2008). According to Booth and Roswell’s (2002) research and application, “Principals who share the responsibility of leadership are much more successful at creating positive change for teachers and students” (p. 17). Hattie (2009) reported findings from his Visible Learning research synthesis that there was approximately 51% effect size for leaders who get everyone in the school working together to know and evaluate their impact, which demonstrates that improving outcomes requires partnered leadership. Moreover, using skilled teachers who possess the qualities of leadership to lead professional improvement and growth can create a network to lead their peers, which can spread throughout the school (Whitaker, 2012). When implementing a digital conversion initiative for one-to-one devices for students, teachers who lead the charge in implementation are critical for success.

**Professional development.** If the expectation is to educate students for a technology-driven society better, then educators need to be educated about how to achieve this expectation (Whitby & Anderson, 2014). With that in mind, research conducted by Rogers’ (2003) Diffusion of Innovations found that a few select teachers first adopt new ideas perceived as risky by others and then the word spreads within their circle of acquaintances. Because of this, having professional development opportunities for teachers led by teachers designed to meet identified needs of the school is essential (Grady, 2011). Bambrick-Samtoyo and Peiser (2012) noted that when other staff members lead professional development opportunities, this could lead to developing leadership capacity while filling in any areas where administrators have limited knowledge.

Furthermore, since many educators seem to have an aversion to new technology, Miller (2015) found that those on a high-quality teaching path that wait for school-provided
professional development for guidance are not as effective as seeking independent opportunities based on personal strengths and weaknesses. “Connected educators find ways to connect with others who share their learning interests so they can learn what they want to learn” (Whitaker et al., 2015, p. 18).

Support systems. The use of technology as a tool to support instruction can improve teaching and learning in schools when provided the right resources and support (Penuel, 20016). Creating support systems that allow teachers to share what works and what may not work is necessary when embarking on any new initiative. Whitby and Anderson (2014) wrote, “If the goal of education is learning, then educators should have a moral imperative to share” (p. 53). The development of a technology leadership team is important so the administration can leverage the talent and skills of the team members to benefit the entire school community as a resource (Grady, 2011).

Digital Learning Environment

Technology is a tool that does not replace quality teaching. Rather, “technology provides educators with tremendous opportunities to motivate students, individualize and personalize instruction, provide rich multimedia learning experiences, reach students who otherwise could not participate in learning-or not” (Jobrack, 2012, p. 131). According to Gura and Percy (2005), for technology to be used correctly in teaching and learning, teachers must have a new and reinvigorated role.

As a practitioner, Solarz (2015) discovered that to best prepare students, create a learning environment that is student-led to empower them to explore and learn themselves while teachers monitor and provide guidance through thought-provoking questions. Fear by some exists that computer-based instruction could be viewed as a replacement for the teacher; however, the teacher becomes even more important as it allows teachers to do more teaching with individual students who are struggling (Khan, 2012). After having led a successful charge in guiding an entire school system to be one-to-one with devices in Mooresville, North Carolina, Edwards (2014) explained how digital conversion goes far beyond one-to-one computing by combining with factors such as students and teachers having full-time Internet access and producing products primarily through a digital world.
**Instructional pedagogy.** Typically, changes in the curriculum happen as a top-down approach, where school divisions set specific guidelines based on state standards regarding curriculum in the classroom (Collins & Halverson, 2009). In turn, teachers are often given flexibility in the delivery of the curriculum to students, frequently choosing not to incorporate technology (Keengwe et al., 2008). Instructional delivery can differ from one school to the next, but in general, there are many ways teachers approach the same curriculum (Whitaker, 2012).

According to Edwards (2014), instructional delivery in a digital learning environment should allow for teacher and student mobility, including learning from students, embracing online resources, and proactively monitoring students. Additionally, when using technology, data reveal that providing scaffolding of materials as well as epistemic engagement and successfully shifting between online and multimedia are important patterns of teaching and learning in a one-to-one classroom (Warschauer, 2006).

Moreover, allowing students to have voice and choice while completing a task within a collaborative group of predetermined, mixed-level abilities helps to increase motivation, engagement, and deepen understanding (Solarz, 2015). Sheninger (2016) noted when teachers give students a choice in tools and products to create their own model to demonstrate understanding of content; the difference is an authentic product that aids meaningful learning. A blended learning approach will allow teachers to use a variety of technology tools to meet the learning objectives and provide an engaging, interactive learning environment (Sheninger, 2014). Beetham and Sharpe (2007) found that creating learning designs in technology-facilitated settings “can provide motivating and stimulating environments to maintain learner interest and they can provide the support learners need to work beyond their comfort zones as they develop their skills, knowledge, and understanding” (p. 104).

**Personalized learning.** According to the Encyclopedia of the Sciences of Learning by Graf (2012), personalized learning is defined as

Tailoring education to learners' current situation, characteristics, and needs to help students to achieve the best possible learning progress and outcomes. Personalized learning can appear on different levels of education, including personalizing curriculums, courses, learning the material, learning activities, and other learning support. Through personalized learning, each learner is provided with an education that is tailored to his/her
individual characteristics and needs and learns in a way that is most suitable for him/her, resulting in different learning experiences for each learner. (p. 2592-2594)

Research by Gura and Percy (2005) went further to say that the content provided to each student can be individualized and customized, tailored to each student’s needs, interests, and purposes. With personalized learning, teachers can use real-time data to accurately identify student needs and make adjustments to instructions to advance or review student learning (Gura & Percy, 2005).

**Individualized devices.** The use of individual devices was often considered a means of bringing additional resources into school for students and teachers to have access to digital tools. According to Sheninger (2012), incredible changes have taken place with the use of individual devices demonstrating that good instruction does not have anything to do with the devices themselves, rather the mindset of helping students become globally prepared. The type of device students’ use is not what makes for achievement, rather, using the device to complete work more efficiently than we can do without the technology (Sterrett, 2011).

**Student Engagement with Technology**

Sheninger (2014) found technology allows for increasing authentic engagement on learning experiences. When students have technology devices, they are more likely to become engaged in activities where they were previously reluctant (Lowther, Ross, and Morrison, 2003). Technology can be an engagement tool when purposefully used to promote knowledge and skill acquisition, assess student learning, and demonstrate and share learning (Jensen, 2013).

According to West (2012), many students find today’s instructional practices boring, making it difficult for them to be engaged effectively. The 21st century learner is regularly connected outside of school, which is in contrast to their academic digital interactions (West, 2012).

Lowther et al. (2003) completed a study examining educational effects of 24-hour access to laptop computers. The focus was to examine how access impacts classroom activities as well as writing and problem-solving skills. The study showed students who used laptops with more depth showed substantial advantages in writing and problem-solving tasks.
Summary of the Literature Review

Since the nineteenth century, instructional delivery to students has changed drastically. Not only are students of all race, ethnicity, gender, and ability levels learning and working together in the classroom, but also the way in which they learn and produce products is very different. While all of these visible changes have taken place, the emergence and use of technology in schools has exploded (Nussbaum-Beach & Hall, 2012).

Division level leaders make decisions that continuously change instructional practices with improved research, which aids in improving student engagement. Instructional changes are frequently driven by policies written at the state or federal level as mandates or guidelines that trickle down to the division level. Policies like NCLB have been rewritten, redefined, and replaced by ESSA to improve student academic proficiencies. In turn, school divisions research ways to meet these expectations before implementing new initiatives into their schools. Equally important in this process is school leaders possessing instructional leadership skills, including the ability to be a digital leader. This instructional leadership would include being able to collect, interpret, and provide instructional practices based on the needs of students as identified through collected data. School leadership is essential for successful implementation of programs to help teachers feel supported and guided through the process. Professional Standards for Educational Leaders (formerly known as ISLLC Standards) set a framework for exceptional leaders in schools. This framework indicates instructional leaders are able to collect, interpret, and provide instructional practices based on the needs of students from collected data.

When the culture of the building is joyful, then teachers become willing participants of implementing school-wide initiatives (Tschannen-Moran, 2004). Furthermore, school leaders are expected to solicit the input of parents and those in the community to be a part of the decisions and on-going implementation process of any new initiative Sterrett (2011).

Nonetheless, principals who are embarking on a one-to-one device initiative should be the visionaries. The ISTE has identified NETSA to help identify qualities administrators should possess. As outlined, NETSA gives goals and recommendations for principals to follow. During this time, providing shared leadership with teacher leaders, professional development for growth, and support systems can help ensure that a one-to-one device initiative is effectively implemented and sustained (Booth and Roswell’s, 2002).
Overall, the types of device students receive when embarking on a one-to-one device initiative does not matter as much as the environment. The environment should include opportunities for students to grapple with material while engaging in collaborative conversations with their peers. One-to-one device initiatives make learning personalized and meaningful for students to encourage improved student engagement.
Chapter Three
Methodology

Purpose of the Study

The purpose of this study of the implementation of one-to-one devices was to examine school leaders’ perceptions of changes in their leadership practices, changes in teachers’ instructional practices, and changes in student engagement. A member of the central office staff and five elementary principals were asked to provide perceptions on the implementation process with their staff. School leaders also provided perceptions on how teachers were led to facilitate instruction while using one-to-one devices.

Research Design and Justification

Merriam (2009) noted that basic qualitative studies are likely the most common form of qualitative research found in education. A basic qualitative study allows for a focus on quality with an emphasis on experience, understanding, and meaning making (Merriam, 2009). This study was set up as a basic qualitative study, which generated data from open-ended questions posed to school leaders during individual interviews. McMillan and Wergin (2010) noted that qualitative research instruments are people observing or recording interviews. The researcher served as the key instrument for this study through the facilitation of study interviews.

During the 2014-2015 school year, the school division selected for this study directed administrators interested in participating in a one-to-one initiative for the upcoming school year to complete an application indicating their interest. The goals of the initiative were to develop a group of schools within the school division to serve as model digital learning schools and to study a variety of digital devices and resources that could positively impact student learning (Eastern Public Schools, 2015). From those applications, six K-5 elementary schools were chosen to participate in a pilot program implementing a one-to-one initiative using a variety of digital devices. One school was excluded from this study due to changes in administration during the school year of implementation. Schools that were selected to participate as implementers of the one-to-one initiative had an opportunity to reflect on their practices, their teachers’ practices, and their perceptions of the possible impact on student engagement for this study. Interview questions solicited responses from participating school leaders about possible
changes in how teachers teach, administrators lead, and students engage in learning. Data were gathered from these interviews to determine themes based on perceptions in how administrators facilitated the implementation of one-to-one devices within their schools or division. According to Merriam (2009), qualitative researchers use an inductive process by building towards theory from interviews and understandings. Data from interviews in this study were inductively analyzed for perceptions on how instructional pedagogy and student engagement might have been impacted.

A document review was completed of school division data gathered from Year-One Developmental Evaluation (Eastern Public Schools, 2016-b). This evaluation completed by the school division selected for this study had solicited input of building administrators, teachers, instructional technology specialists, students, and parents who participated in the first year one-to-one device initiative implementation at the elementary and secondary levels. Data from administrators that relate to the research questions were compared with the results of the study. It should be noted that these data were aggregated with elementary and secondary administrators that participated in the school division’s first year of one-to-one device implementation with a 59.4% response rate (Eastern Public Schools, 2016-b).

The research design for this study was selected so administrators who facilitated the implementation of the one-to-one device initiative could reflect and provide their perceptions. Merriam (2009) described interviewing as an effective data collection technique by gaining another person’s perspective. After the inductive process where the researcher gathers data to build concepts, the researcher will report descriptive outcomes (Merriam, 2009). The descriptive outcomes can provide the reader a means to visualize the setting and provide the element of shared experiences (Creswell, 2014). Creswell (2014) indicated when researchers use detailed descriptions to convey the outcomes the results are more realistic; they can add to the validity of the findings.

**Research Questions**

The research questions that follow guided this study.

1. What do school leaders perceive as changes to the way they lead when implementing a new one-to-one device initiative?
2. What do school leaders perceive as changes in the delivery of instruction when implementing a new one-to-one device initiative?

3. What do school leaders perceive as changes to student engagement as a result of implementing a new one-to-one device initiative?

**Site and Sample Selection**

This study sought voluntary participation from a chosen population of elementary school principals and a member of the central office staff from one large, K-12 public school division in Virginia. To maintain confidentiality, the pseudonym Eastern Public Schools was given to the school division in this study. Eastern Public Schools’ website indicated the school division serviced approximately 68,000 students dispersed in 55 elementary schools, 15 middle schools, and 12 high schools at the time of the study (Eastern Public Schools, 2016-a). Eastern Public Schools employed roughly 15,000 people when the study took place (Eastern Public Schools, 2016-a). This school division was selected because of its recent adoption of a one-to-one digital learning model in several of its K-5 elementary schools based on the school division’s strategic framework. Strategies within the framework included providing students with opportunities for personalized learning while incorporating digital resources to prepare them for employment or post-secondary educational opportunities in a globally competitive environment (Eastern Public Schools, 2015). The data collected for this study were restricted to those elementary schools within the selected division who piloted the first year of one-to-one device implementation.

**Data Procedures**

A participant perspective is when the point of view of the individual studied becomes critical to the understanding (McMillan & Wergin 2010). This study employed a participant perspective approach. Participants provided their perspective through an interview format. The data were gathered from interviewing five elementary school principals whose schools were selected to participate in the one-to-one device implementation program for the 2015-2016 school year. Although the school division selected six K-5 elementary schools to pilot the implementation of a one-to-one initiative, one of the schools was excluded from this study due to a change in administration during the 2015-2016 school year. A member of the central office staff that oversaw and facilitated initial implementation of the one-to-one initiative for the school
division during the 2015-2016 school year was also interviewed. Participation was requested from five elementary principals and one member of the central office staff who participated as implementers of the initiative to reflect on perceptions of their practices, classroom instruction of teachers, and the possible impact on student engagement.

**Instrument Design & Validation**

Questions used in the interviews should meet content standards to ensure questions are asking for the right information (Groves et al., 2013). The researcher confirmed the research and interview questions were aligned using a panel of experts. Cognitive standards should also be met when constructing interview questions, noting respondents’ consistent understanding (Groves et al., 2013). The researcher used subject matter experts to ensure that the appropriate information was being sought from the study participants by the interview questions. Finally, interview questions should meet usability standards. Usability standards refer to the questions’ ability to be used with ease by others (Groves et al., 2013). The researcher ensured the questions were written with clarity to increase usability for future research. This study met content, cognitive, and usability standards.

Merriam (2009) defined interviews as a person-to-person meeting where one person seeks to gain information from another. McMillan and Wergin (2010) noted that the quality of the instrument in a qualitative study is enhanced by audio recordings and having interview notes reviewed by participants for accuracy. The researcher conducted audio-recorded interviews by using questions that were developed by Maschmann (2014) and McDonald (2014). Permission to use these interview questions was requested and granted via email correspondence (see Appendix A). The studies of both Maschmann (2014) and McDonald (2014) were mixed methods and focused on the impact of technology on high school students’ literacy. The researcher selected questions from the two studies–Maschmann (2014) and McDonald (2014)–that targeted administrators’ perceptions because these questions provided insight to answer the research questions guiding the current study. The researcher reduced the interview questions to seven from the 13 original interview questions used by Maschmann (2014) and McDonald (2014); minor modifications to the interview questions’ wording were made to provide clarity for the current study. The researcher modified the original interview questions to more accurately describe current technology use from laptop computers to devices as well as change the focus
from districts to individual schools. Questions were reviewed and altered, if necessary, based on feedback provided to the researcher from subject matter experts.

Groves et al. (2013) recommended utilizing expert reviews, where subject matter experts review the questions for appropriate content. As part of the review process, the researcher used expert reviews for this study. The subject matter experts included administrators who were enrolled in a doctoral education leadership program and demonstrated the effective use of technology to enhance instruction and improve student learning as part of the state requirements for licensure where the study took place. The subject matter expert administrators were given the interview questions that were provided to the school leaders for this study. The subject matter experts were then asked to provide feedback to the questions, ensuring that what was asked was understandable and aligned to the research questions for this study. Once the field test group provided an initial round of feedback to the researcher, any necessary adjustments were made to the interview questions to increase clarity. The modified first round questions were given back to the same field test group for review and any additional feedback.

Moreover, rehearsal interviews, called field pretests, were completed with administrators in the same school division selected for participation in this study to look for high rates of missing data or inconsistencies. The purpose of field pretests is to evaluate the instrument, data collection, and respondent selection procedures (Groves et al., 2013). Adjustments were made after any discrepancies were noted from the field pretests. Based on the feedback received from the subject matter expert reviews and field pretests, the interview questions were validated.

Through the comparison of outcomes obtained from individual interviews, a triangulation of data were conducted (Merriam, 2009). According to Creswell (2014), data triangulation allows for themes to be established based on perspectives from participants, adding to the validity of the study. Qualitative research’s value is found in the themes and descriptions developed in context (Creswell, 2014). Themes from possible techniques school leaders used that made the one-to-one device initiative successful as well as what potential pitfalls to avoid were explored in this study.

Creswell (2014) identified coding as themes that appear as major findings in qualitative studies. Coding was conducted from the themes that arose from the individual interviews with school principals and a member of the central office staff to report out the researcher’s
interpretation of the findings. Creswell (2014) also suggested that another researcher crosscheck codes for qualitative reliability. For this study, a cross-checker was used.

The researcher functioned as an assistant principal in one of the schools participating in the study at the time of the one-to-one device initiative implementation. A potential for bias existed; however, the study interviews were targeted toward principal perceptions only. Additionally, during the timeframe when this study was conducted, the researcher was no longer functioning in the capacity of an assistant principal with any of the schools participating in this study. Furthermore, the researcher ensured that questions were presented to the participants in a consistent manner.

**Data Treatment**

The school division, individual schools, and selected participants were assured confidentiality and anonymity by assigning pseudonyms for use in this study. Transcriptions of the audio-recorded responses from participants to the interview questions were emailed to each participant individually. To ensure internal validity, respondent validation was conducted where feedback was requested on emerging findings from the interview (Merriam, 2009). McMillan and Wergin (2010) found that cross-examination makes the analysis of data transparent and the results accurate and trustworthy. The respondents were given an opportunity for cross-examination to review their responses to ensure that the transcription echoed an accurate depiction of their reflections.

**Data Management**

As part of the requirements for conducting research, the researcher has received Institutional Review Board training (see Appendix B) and received approval for the study from Virginia Polytechnic Institute and State University’s Institutional Review Board (see Appendix C). After approval was obtained, permission was sought from the selected school division for the study. Once division approval was obtained (see Appendix D), permission was sought from all chosen school leaders to participate in the study via email. The email explained the objectives of this study as well as why these school leaders were chosen to participate (see Appendix E). A form giving consent to participate in the study was reviewed at the onset of all interviews with the participants, where a signature was obtained for participation (see Appendix
F). School leaders who agreed to participate in this study scheduled a time to meet individually with the researcher. The researcher presented interview questions (see Appendix G), and participant responses were recorded through the use of a digital audio recorder. The recordings were digitally stored in a password-protected file for transcription. Once transcriptions were completed, with participants’ approval of accuracy or member checks, the digital recordings were deleted to help maintain the anonymity of all participants. All transcriptions and digital recordings used in the final analysis for this study will be destroyed upon successful completion of the dissertation defense.

**Methodology Summary**

The methodology presented in this chapter for the participant perspective basic qualitative study describes the way in which data were collected and analyzed to answer the study’s research questions. The interview questions for the study represent a modified version of questions used in a previous similar study with a different target population. To ensure alignment to the study, subject matter experts vetted the modifications to these questions through a review process. Five selected elementary principals and one member of the central office staff from a large school division in Virginia, who participated in a one-to-one technology initiative, were asked to participate in an interview to generate their perceptions of implementation. The researcher analyzed the responses from the interview questions to find common trends and themes. The results from this study are presented in chapter four.
Chapter Four
Results of the Study

Purpose of the Study

The purpose of this study of the implementation of one-to-one devices was to examine school leaders’ perceptions of changes in their leadership practices, changes in teachers’ instructional practices, and changes in student engagement. A member of the central office staff and five elementary principals were asked to provide perceptions on the implementation process with their staff. School leaders also provided perceptions on how teachers were led to facilitate instruction while using one-to-one devices.

This chapter presents an analysis of the data gathered from the study, and will identify the major themes that emerged from the individual interviews. The data were collected, presented, and analyzed in regards to the following research questions:

1. What do school leaders perceive as changes to the way they lead when implementing a new one-to-one device initiative?
2. What do school leaders perceive as changes in the delivery of instruction when implementing a new one-to-one device initiative?
3. What do school leaders perceive as changes to student engagement as a result of implementing a new one-to-one device initiative?

In order to help maintain anonymity, all schools involved in the study were provided with a pseudonym as follows: school 1, school 2, school 3, school 4, and school 5. Each principal assigned to these schools was given the corresponding number and assigned as follows: P1, P2, P3, P4, and P5. The central office staff was assigned the pseudonym CO.

Background Information of Participating Schools

School 1, led by P1 for the third consecutive school year, is a Title I school servicing approximately 410 students with a mobility rate of approximately 30% (Eastern Public Schools, 2016-c). Of the students served, 64.5% were economically disadvantaged, 5.4% were gifted, 3.9% were limited in English proficiency, and 6.8% received special education services (Eastern Public Schools, 2016-c). School 1 had a part time Instructional Technology Specialist assigned that assisted staff with instructional technology needs during the 2015-2016 school year. On
average, the teachers at school 1 had approximately 11.6 years of teaching experience, with 10.3% of the instructional staff new to the school division (Eastern Public Schools, 2016-c). Students at school 1 used iPads and laptops or Chromebooks during the implementation of the one-to-one device initiative (Eastern Public Schools, 2016-b).

School 2, led by P2 for the fourth consecutive school year, is a non-Title I school servicing approximately 559 students with a mobility rate of approximately 20% (Eastern Public Schools, 2016-c). Of the students served, 39.4% were economically disadvantaged, 6.6% were gifted, 1.8% were limited in English proficiency, and 11.3% received special education services (Eastern Public Schools, 2016-c). School 2 had a part-time Instructional Technology Specialist assigned that assisted staff with instructional technology needs during the 2015-2016 school year. On average, the teachers at school 2 had approximately 14.6 years of teaching experience, with 2.4% of the instructional staff new to the school division (Eastern Public Schools, 2016-c). Students at school 2 used iPads and laptops during the implementation of the one-to-one device initiative (Eastern Public Schools, 2016-b).

School 3, led by P3 for the second consecutive school year, is a non-Title I school servicing approximately 531 students with a mobility rate of approximately 8% (Eastern Public Schools, 2016-c). Of the students served, 4.9% were economically disadvantaged, 14.1% were gifted, 1.5% were limited in English proficiency, and 10% received special education services (Eastern Public Schools, 2016-c). School 3 had a full time Instructional Technology Specialist assigned that assisted staff with instructional technology needs during the 2015-2016 school year. On average, the teachers at school 3 had approximately 15.2 years of teaching experience, with 5.4% of the instructional staff new to the school division (Eastern Public Schools, 2016-c). Students at school 3 used iPads, Android tablets, and laptops during the implementation of the one-to-one device initiative (Eastern Public Schools, 2016-b).

School 4, led by P4 for the second consecutive school year, is a non-Title I school servicing approximately 694 students with a mobility rate of approximately 8% (Eastern Public Schools, 2016-c). Of the students served, 15.2% were economically disadvantaged, 9.9% were gifted, 1.2% were limited in English proficiency, and 10.5% received special education services (Eastern Public Schools, 2016-c). School 4 had a full time Instructional Technology Specialist assigned that assisted staff with instructional technology needs during the 2015-2016 school year. On average, the teachers at school 4 had approximately 16.8 years of teaching experience,
with 2.4% of the instructional staff new to the school division (Eastern Public Schools, 2016-c). Students at school 4 used iPads and laptops or Chromebooks during the implementation of the one-to-one initiative (Eastern Public Schools, 2016-b).

School 5, led by P5 for the 19th consecutive school year, is a non-Title I school servicing approximately 708 students with a mobility rate of approximately 13% (Eastern Public Schools, 2016-c). Of the students served, 18% were economically disadvantaged, 15.7% were gifted, 4.2% were limited in English proficiency, and 7.9% received special education services (Eastern Public Schools, 2016-c). School 5 had a full time Instructional Technology Specialist assigned that assisted staff with instructional technology needs during the 2015-2016 school year. On average, the teachers at this school had approximately 12.5 years of teaching experience, with 2.3% of the instructional staff new to the school division (Eastern Public Schools, 2016-c). Students at school 5 used iPads and laptops during the implementation of the one-to-one device initiative (Eastern Public Schools, 2016-b).

The member of the central office staff who participated in this study led the implementation of the one-to-one device initiative for the selected school division. The central office staff member’s role included overseeing a cadre of 11 K-12 schools that participated in the one-to-one device initiative, including the five elementary schools that participated in this study. The central office staff member’s role also required leading and supporting the instructional technology department, school administrators, and classroom teachers, while keeping student learning at the forefront of the initiative.

All schools that participated in this study were fully accredited at the time of the one-to-one device initiative. The number of students in the participating schools ranged from 410 at school 1 to 708 students at school 5, respectively. The mobility rate refers to the percentage of students transferring in and out of a given school. School 1 had a 30% mobility rate, which is 10 points higher than school 2, 22 points higher than school 3 and 4, and 17 points higher than school 5. Approximately 64.5% of school 1’s students were economically disadvantaged students, which is 25.1 points higher than school 2, 59.9 points higher than school 3, 49.3 points higher than school 4, and 46.5 points higher than school 5. School 5 had 15.7% of their students who are identified gifted, which is 1.6 points higher than school 3, 5.8 points higher than school 4, 9.1 points higher than school 2, and 10.3 points higher than school 1. School 5 had 4.2% of its students with limited English proficiency, which is .3 points higher than school 1, 1.8 points
higher than school 2, 2.7 points higher than school 3, and 3 points higher than school 4. Approximately 11.3% of the students at school 2 received special education services, which is .8 points higher than school 4, 1.3 points higher than school 3, 3.4 points higher than school 5, and 4.5 points higher than school 1. School 4’s teachers had an average of 16.8 years of teaching experience, which was 1.6 years greater than school 3, 2.2 years greater than school 2, 4.3 years greater than school 5, and 5.2 years greater than school 1. School 1 had 10.3% of its teachers new to this school division, which was 4.9 points higher than school 3, 7.9 points higher than school 2 and school 4, and 8 points higher than school 5. Table 1 provides a summary of the participating schools’ comparative demographic information.

Table 1  
Summary of Comparative Demographic Information

<table>
<thead>
<tr>
<th></th>
<th>School 1</th>
<th>School 2</th>
<th>School 3</th>
<th>School 4</th>
<th>School 5</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Years Principal at School</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>19</td>
</tr>
<tr>
<td>Title I</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Approximate # of Students</td>
<td>410</td>
<td>559</td>
<td>531</td>
<td>649</td>
<td>708</td>
</tr>
<tr>
<td>Mobility Rate</td>
<td>30.0%</td>
<td>20.0%</td>
<td>8.0%</td>
<td>8.0%</td>
<td>13%</td>
</tr>
<tr>
<td>Economically Disadvantaged</td>
<td>64.5%</td>
<td>39.4%</td>
<td>4.9%</td>
<td>15.2%</td>
<td>18%</td>
</tr>
<tr>
<td>Gifted</td>
<td>5.4%</td>
<td>6.6%</td>
<td>14.1%</td>
<td>9.9%</td>
<td>15.7%</td>
</tr>
<tr>
<td>Limited English Proficiency</td>
<td>3.9%</td>
<td>1.8%</td>
<td>1.5%</td>
<td>1.2%</td>
<td>4.2%</td>
</tr>
<tr>
<td>Special Education</td>
<td>6.8%</td>
<td>11.3%</td>
<td>10.0%</td>
<td>10.5%</td>
<td>7.9%</td>
</tr>
<tr>
<td>Instructional Technology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialist</td>
<td>Part-time</td>
<td>Part-time</td>
<td>Full-time</td>
<td>Full-time</td>
<td>Full-time</td>
</tr>
<tr>
<td>Average Years Teaching Experience</td>
<td>11.6</td>
<td>14.6</td>
<td>15.2</td>
<td>16.8</td>
<td>12.5</td>
</tr>
<tr>
<td>New to System</td>
<td>10.3%</td>
<td>2.4%</td>
<td>5.4%</td>
<td>2.4%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Devices Used</td>
<td>iPads</td>
<td>iPads</td>
<td>iPads</td>
<td>iPads</td>
<td>iPads</td>
</tr>
<tr>
<td></td>
<td>Laptops</td>
<td>Laptops</td>
<td>Laptops</td>
<td>Laptops</td>
<td>Laptops</td>
</tr>
<tr>
<td></td>
<td>Tablets</td>
<td>Chromebooks</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Explanation of the Data

The seven interview questions used were based on the three research questions guiding this study. The data are reported in the following sections by research questions. Additionally, the data relating to the interview questions are grouped according to the overarching theme of the questions as they relate to the research questions. Interview questions three, six, and seven were used to answer research question one. These interview questions focused primarily on the role of the leader when facilitating the implementation of the one-to-one device initiative. Interview questions four, five, and seven were used to answer research question two. With these questions, the focus was on teachers’ instructional delivery and pedagogy that may differ with device implementation. Finally, interview questions one, two, and seven were used to answer research question three. These interview questions focused on the impact devices may have on students. The interview questions that participants answered were as follows:

1. What are some of the benefits for students in a one-to-one learning environment?
2. Describe the changes in student engagement you have observed in the one-to-one device environment.
3. Explain the key instructional expectations and/or policies regarding the one-to-one device usage in your school.
4. In what ways, if any, has the one-to-one device environment changed how students learn?
5. In what ways, if any, has the one-to-one device environment changed the way teachers teach?
6. In what ways, if any, has the one-to-one device environment changed the way administrators lead?
7. Describe your overall perception of the one-to-one device initiative?

RQ 1: What do school leaders perceive as changes to the way they lead when implementing a new one-to-one device initiative?

Digital leadership. The participants were asked, based on their perceptions, whether or not there were changes in the way school administrators lead in a one-to-one device environment. They were also asked about the instructional expectations and/or policies regarding the one-to-one device environment. Responses to these questions led to participants’
identifying topics of digital leadership. Those topical themes were administrative leadership, professional development, supporting failure, administrative support, apprehensions, parents, and parallel modeling and learning.

*Administrative leadership.* Two out of five principals, as well as a member of the central office staff, felt that it was the responsibility of the administrators to take the lead in support of the new digital initiative. P5 indicated that the principal had the responsibility of being a motivator and support for the initiative. CO stated, “School leaders have the unique responsibility of helping teachers embrace change, helping them understand the rationale behind change (CO, l124-126).” P2 shared

I have to carry the banner. I have to be the champion for digital learning. You know, in the school, when you’re shifting from traditional to digital learning environments, you have to know what happens in the culture of that building. You have to understand how that can’t happen overnight. (P2, l157-160)

*Professional development.* All of the principals (100%) indicated the necessity for professional development in order for the one-to-one device initiative to be implemented successfully. P2 indicated the need to provide professional learning opportunities for teachers to ensure that the staff was continuing to grow in their abilities to provide digital instruction for students. P2 advised, “You have to provide a lot of opportunities for staff development” (P2, l169-170). P3 shared that the professional development provided to their staff centered on the school’s expectations of maintaining digital portfolios for their students. P3 went on to say as the leader, she did not want to have an expectation without the support and knowledge of the technology for implementation. P5 shared that school 5 also had a focus on professional development for the staff that included publishing, assessment, and portfolios. The teachers at school 5 were led to work as a grade level to choose two programs that would benefit meeting the school goal of implementing technology in the areas of publishing, assessment, and portfolios for each of the three grade levels. P5 stated, “Giving the expectations and training gave the teachers some comfort that they only needed to learn six programs or applications” (P5, l43-45). P1 emphasized, “We have lots and lots of conversation about how the technology fits in, what the expectation is, so that we’ve taken away all the fear because inevitably something doesn’t work” (P1, l57-59). P1 and P4 both proposed that professional development met the
needs of teachers by offering some professional development as a flipped model. In addition to providing the professional development, P4 also indicated the obligation of school leaders to monitor the implementation of the technology use in the classrooms of what the teachers are learning during professional development.

**Supporting failure.** Four out of five of the participating principals also identified the need for supporting failure of both students and staff as the digital transformation occurs. P4 noted the importance of having a genuinely positive attitude, even in the presence of failure. P4 also stated, “The teachers have to try and, you know, they’re allowed to fail, but they have to try. They can’t just say well, I don’t want to do that” (P4, l35-36). P3 also encouraged failure because without trial and failure, there is not forward movement on the digital pathway. P1 felt that the first hurdle in moving forward was proving to teachers that trying technology, which resulted in unsuccessful outcomes, would not be held against them. P1 went further by stating, “Teachers know without a doubt they’ll never be penalized for that, and they’re encouraged to take risks” (P1, l59-60). P5 echoed the same sentiments to the staff to take risks and accept that everything will not be perfect. P5 concluded that teachers knowing that failure was okay, “helped them relax knowing that we just wanted them to try things. Just try one thing and see if you can get that down, then, try something else” (P5, l49-50).

**Administrative support.** During the initial implementation, three out of five principals and the member of the central office staff suggested that teachers needed the support of the administration. This support consisted of infrastructure needs, morale, time, advocacy, and staffing needs. P4 found that during the implementation it was easy for teachers to feel frustrated at times, so safeguarding morale was important to continue the momentum that had been built. P4 went further to say,

Making sure that there’re supports in place for those things to happen. If they need time to learn something, making sure there’s time to learn that. Making sure there’s any kind of support. If a teacher says, I need support for this, making sure that teacher connects with the support that she needs or make that connection for the teacher (P4, l128-133).

P2 reiterated the need to provide teachers with whatever resources were needed to help in the growth process. P3 shared the necessity for administrators to be familiar with the
technological requirements of teachers so when the need arises to advocate for teachers, the administrator can effectively take that burden away. P3 went on to say,

I had to advocate on both ends. I had to advocate for my teachers that, yes, we’re going to do this, but I also had to advocate back on the other side to leadership above me and say if we’re going to do this, you have to be thinking about infrastructure. (P3, l258-261)

CO also shared the need for infrastructure support when it comes to just figuring out how to manage the devices in the building. Managing the devices, says CO, includes how devices will be inventoried, stored, charged, and teachers trained and supported on their use.

**Apprehensions.** Four out of five principals reported some form of apprehension either beginning the implementation process, during the process, or even at the conclusion of the first year of implementation. P2, P3, and P4 all acknowledged that whether a school has access to one-to-one devices or not, the focus needed to remain on student achievement. P2 went further to say, “The main focus in a digital school, in a one-to-one school, in a digital learning environment, is making sure that the kids are using those devices for a purpose. It has to be purpose-driven learning” (P2, l41-44). Both P2 and P3 were both concerned about the possibility of lost instructional time, yet both reported that the payoff was worth the investment. P1 was worried about teachers resorting back to some isolated learning, but shared that teachers have worked hard to effectively implement collaborative practices. P3 stated that some of the devices have started to have some wear issues, but indicated that with good teacher planning as well as voice and choice for the students, work could continue in those moments with or without technology.

**Parents.** Four out of five principals reported the necessity of involving parents in the process, either through the unique homework needs or by involvement in the continuum. P3 shared that since there were less paper/pencil tasks going home, it was important to find ways to involve parents in the journey. P3 also felt it was important for the administrator to know the functionality of programs to help support parents and teachers when questions arise. P1 and P5 stated the Google platform has allowed parents to share in their child’s instruction. P1 stated, “I have to sell it to our parents all the time because they don’t know it. It’s not what they’re comfortable with” (P1, l180-181). In reference to parent and teacher communication P2 offered
This has given an amazing way for teachers to communicate with parents. It’s also broadened their ability to keep connected with the parents and their classroom because they can do it in a quick, digitally easy way. Parents are always connected; parents are always involved. (P2, l135-138)

Parents also needed to know that their child is not just sitting in front of a computer screen all day, added P3. P3 cautioned, “We’ve had to really articulate to parents that 50/50. That we are having a blend of time on technology and time that they’re still working together collaborating, building, designing” (P3, l324-327). The review of the school division’s data revealed that 100% of participating administrators’ perceived that stakeholders understood division’s policies and guidelines for using technology and social media (Eastern Public Schools, 2016-b). The review of the school division’s data also revealed that 100% of participating administrators perceived that stakeholders understood desired student and teacher outcomes for the initiative (Eastern Public Schools, 2016-b).

**Parallel modeling and learning.** The member of the central office staff, as well as 100% of the participating principals, agreed with the importance of the school leaders’ role in modeling and learning about technology alongside the staff. All participants identified the need for modeling the use of technology that was desired in the classroom. CO commented, “Whether you might be a technically proficient leader or learning alongside teachers, you’re leading by showing this idea that we’re all on a learning journey” (CO, l136-138). P1 found the one-to-one device environment has required intrinsic motivation to help move along the digital continuum. P2 noted, “I’ve always thought that as a school leader I have to model what I expect teachers to do, but then, at the same time, I have to make sure that I follow right behind them and give them help” (P1, l166-168).

Table 2 indicates the responses of the participants associated with the themes resulting from the interview questions related to research question one. Two principals and the central office staff member identified administrative leadership as an important component of the one-to-one digital initiative. Four principals identified apprehensions, supporting failure, and parents as important components of the one-to-one digital initiative. The central office staff member and three principals identified administrative support as an important component of the one-to-one digital initiative. Five principals identified professional development as an important component
of the one-to-one digital initiative. All participants in the study identified parallel modeling and learning as an important component of the one-to-one digital initiative.

Table 2
Digital Leadership Theme Responses by Participants

<table>
<thead>
<tr>
<th>Theme</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
<th>P5</th>
<th>CO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Leadership</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Professional Development</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Supporting Failure</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Administrative Support</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apprehensions</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parents</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parallel Modeling and Learning</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

RQ 2: What do school leaders perceive as changes in the delivery of instruction when implementing a new one-to-one device initiative?

Instructional delivery. The participants were asked, based on their perceptions, whether or not there were changes in the way students learn in a one-to-one device environment. They were also asked, based on their perceptions, whether or not there were changes in the way teachers teach in a one-to-one device environment. Responses led to participants’ identifying focuses of instructional delivery. Those topical themes were opportunities for instruction, finding the right tool, instructional planning, teacher flexibility, small leaps forward, a different way of teaching, and teacher as facilitator.

Opportunities for instruction. Three out of five principals and the central office staff member found that a one-to-one device environment afforded opportunities for instruction for all students. P1, P2, P3, and CO shared how the devices allow for pathways to be opened for students in a meaningful, relevant way that could not be done before. P2, P4, and CO acknowledged the excitement that goes along with connecting to the world through global learning opportunities. P3 stated,
If this is just a replacement for paper/pencil, we’re not using it the right way. But if we have the opportunity to do something with the students that wouldn’t have been possible without the device, then that’s what we have to focus on. Those are the opportunities we have to reach for. (P3, l21-25)

P4 found that students had more opportunities to collaborate with each other instead of completing paper/pencil activities. P5 responded, “We worked really hard last year to make sure we provided a balance of learning opportunities” (P5, l17-18). The review of the school division’s data also revealed that 100% of participating administrators perceived that learning incorporates real-time/authentic contexts more often since the initiative began (Eastern Public Schools, 2016-b).

**Finding the right tool.** The central office staff member, as well as four out of five school administrators, noted the importance of when to use a digital tool versus continuing with a traditional paper/pencil task. P1, P2, P4, and P5 pointed out that not every lesson is equipped for technology, and there might be times that paper/pencil is the better method; however, the technology should be used for more than just a replacement of worksheets. P1 declared, “Any activity that they’re doing in class where they have the option to use their device as opposed to paper/pencil, it’s far less laborious and far, far more engaging” (P1, l30-31). CO concluded, “I would say there are more opportunities for students to have active engagement versus just compliance with activities when devices are used appropriately and meaningfully” (CO, l31-33).

**Instructional planning.** The central office staff member and 100% of principals suggested that one-to-one devices impacted teachers’ instructional planning. P1, P3, P4, and P5 explained teachers purposefully planned instruction while always considering how devices fit into the equation. CO said, “It changes the way teachers plan to teach and approach their instructional objectives because they’re able to think beyond the tangible resources they might have on hand to a broader world” (CO, l109-111). P2 stated, “It really has expanded their, not just knowledge of the pedagogy in the classroom and not just knowledge of the digital tools that are needed, but it’s also expanded their professional growth” (P2, 109-111). P3 shared, “The planning part has become far more intentional” (P3, l196). P4 determined that teachers were far more likely to use data to drive their instruction since the implementation of the one-to-one device initiative. CO concluded, “Well, simply put, I think they’re constantly having to think about how are they going to integrate technology appropriately or what tools and devices make
the most sense for the learning objective” (CO, l105-107). The review of the school division’s data also revealed that 95% of participating administrators perceived that teachers provide students personalized learning opportunities (Eastern Public Schools, 2016-b).

**Teacher flexibility.** Four out of five of principals suggested that one-to-one devices provided teachers with flexibility to conduct lessons with different programs or platforms. This would range from specific technology programs that were used to the types of devices for task completion. P1 and P3 both spoke specifically about the positive impact Google classroom had on the one-to-one device initiative at their schools. P2 and P5 shared that their teachers had a large toolbox of programs accessible to help engage and attract students to their learning. P2 found,

> It gives the teachers such a huge toolbox to help the students learn. And, that toolbox now is full of things that are engaging and attractive to students, rather than the things of the past – textbooks, worksheets, those kinds of things that are what students say are boring to them. (P5, l83-86)

**Small leaps forward.** Two out of five principals indicated their expectations for teachers were to just continue to grow. P3 stated, “The first semester was really trying to figure out and get our footing on what was going to be interactive and engaging for the students” (P3, l38-40). P1 found that it was important to let teachers get their feet wet and then they felt much more confident and comfortable.

**A different way of teaching.** The central office staff member and three out of five principals agreed that one-to-one devices presented a different way of instruction for both students and teachers. P2 and P3 said their teachers were fearful that they would be asked to go back to a time where students did not have their own devices. CO found,

> It helps them see where they are on the continuum of learning. It helps them decide how they might reach the next steps, in a different way than they might have seen before, they are a little more in control of that pace in that task often times. (CO, l64-67)

P5 shared, “I was so impressed with what the teachers and students were doing. And the teachers were amazed at what the students were creating and accomplishing with their guidance” (P5, l120-122).
Teacher as facilitator. Four out of five principals and the central office staff member determined that in a one-to-one digital environment, teachers had to relinquish some control to students for their learning. P1 and CO indicated that students were able to work in a personalized learning situation, while the classroom teacher had more opportunities to provide small group instruction. P2 and P3 reported that teachers in this environment were learning facilitators, which is a crucial component to transformational instruction. P2 stated, “Students are taking responsibility for learning, teachers are giving them more resources and more tools, it really has transformed our classrooms into something very different than you would see in a traditional school that doesn’t have these digital devices” (P2, l206-209). P5 noted that teacher facilitation allowed for more personalization and differentiation for students. The review of the school division’s data also revealed that 95% of participating administrators perceived that teachers used the devices to collect real-time data and provide students high-quality feedback (Eastern Public Schools, 2016-b).

Table 3 indicates the responses of the participants associated with the themes resulting from the interview questions related to research question two. Two principals identified teachers taking small leaps forward as an important component of the one-to-one digital initiative. The central office staff member and three principals identified a different way of teaching and opportunities for instruction as essential components of the one-to-one digital initiative. Four principals identified teacher flexibility as an important component of the one-to-one digital initiative. The central office staff member and four principals identified teacher as facilitator and finding the right digital tool as important components of the one-to-one digital initiative. All participants in the study identified instructional planning as an important component of the one-to-one digital initiative.
Table 3

*Instructional Delivery Theme Responses by Participants*

<table>
<thead>
<tr>
<th></th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
<th>P5</th>
<th>CO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunities for Instruction</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Finding the Right Tool</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Instructional Planning</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Teacher Flexibility</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Small Leaps Forward</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A Different Way of Teaching</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Teacher as Facilitator</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**RQ 3: What do school leaders perceive as changes to student engagement as a result of implementing a new one-to-one device initiative?**

**Impact on students.** The participants were asked, based on their perceptions, what some of the benefits were for students in a one-to-one learning environment. They were also asked, based on their perceptions, to describe the changes in student engagement observed in the one-to-one device environment. Responses led to participants’ identifying focuses of how a one-to-one device environment impacts students. Those topical themes were student collaboration, student-centered learning, meeting diverse learning needs of all students, access to resources, and students’ familiarity with technology.

**Student collaboration.** Four out of five principals and the central office staff member discovered that student collaboration increased with the implementation of one-to-one devices. P1, P3, P5, and CO noted that students were able to expand learning through other modalities rather than only those resources available within the school setting. P1, P3, and P4 also explained the ability for students to collaborate on a document simultaneously when using digital resources. P4 stated, “It’s not just the students that are engaged, they’re engaged more in their world” (P4, l19-20).

**Student-centered learning.** The member of the central office staff and 100% of principals suggested that providing students with voice and choice increased student engagement. P1, P3, and P4 noted students should have voice and choice in not only the type of device used for a given task, but also how they were going to accomplish the task to demonstrate their understanding. P1 suggested students should have choice in the pace of work that is developmentally appropriate. P2 found that student voice and choice allowed students to
personalize their own journey based on their interests and learning targets. P2 went on to say, “It really has changed our classrooms because the students can take more control over their learning. They’re given more responsibility to determine how they want to do it, and that in turn creates ownership for learning” (P2, l90-92). P5 determined that students also liked choice in flexible seating while they worked collaboratively on their devices. CO emphasized, “They’re actively taking ownership of the learning, they are leading the learning, and this idea of student-centered learning has really risen to the top as a result. It puts students in the center in a way they’ve not been before” (CO, l149-152). The review of the school division’s data also revealed that 100% of participating administrators perceived that teachers empower students to choose their learning path (Eastern Public Schools, 2016-b).

Meeting the diverse learning needs of all students. Four out of five principals and the central office staff member determined that in a one-to-one digital environment, it was easier to meet the diverse learning needs of students. P1 shared experiences where students with disabilities were able to demonstrate their understanding in a way that could not happen in a traditional teacher-led classroom. P2 explained,

Using a digital device levels the playing field for students. Sometimes students might have a learning disability, sometimes students might have a weakness in an area, a weakness that isn’t always recognized or obvious when they’re using a digital device. It allows them to level the playing field within their learning styles. (P2, l69-72)

P4 stated that having on-going access to the computer extended the responses that teachers received from students with disabilities in writing. P5 determined that having one-to-one device access made learning much more equitable for students. CO noted that students may need to continue on a learning journey longer than others, but that is to be expected when digital tools are leveraged appropriately.

Access to resources. Three out of five principals and the central office staff member suggested that in a one-to-one digital environment, students had access to many more resources than just those textbooks or primary sources in the classroom. P1 found that teachers were providing student’s choice within a lesson on what resources they had available for them to explore. P2 shared that students had access to pretty much any resource needed at any time, and students loved that connection. P5 stated, “There is a depth of knowledge that the students can
gain because they have access and the ability to spend as much time as needed to explore a variety of resources” (P5, l112-114). CO acknowledged that students personalized their devices for their learning based on the resources that they determined were needed on an individual basis. The review of the school division’s data also revealed that 100% of participating administrators perceived that teachers used devices and digital resources to connect students to authentic learning experiences (Eastern Public Schools, 2016-b).

**Students’ familiarity with technology.** When considering the impact of the students’ familiarity with technology, 100% of the principals interviewed expressed the importance of technology-integrated instruction. All participating principals indicated that students have constant exposure to technology at home and most since they were very young. P5 found that students were even helping teachers learn and grow on this technology journey. P5 went on to say, “A lot of the teachers would say they have those kind of moments where they realized that they needed to stop thinking that they needed to be perfect in a program for the students to have success” (P5, l128-130).

Table 4 indicates the responses of the participants associated with the themes resulting from the interview questions related to research question three. Four principals identified access to resources as an important component of the one-to-one digital initiative. Five principals identified students’ familiarity with technology as an important component of the one-to-one digital initiative. The central office staff member and four principals identified meeting the diverse learning needs of all students and student collaboration as important components of the one-to-one digital initiative. All participants in this study identified student-centered learning as an important component of the one-to-one digital initiative.

Table 4

*Impact on Students Theme Responses by Participants*

<table>
<thead>
<tr>
<th></th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
<th>P5</th>
<th>CO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Collaboration</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Student-Centered Learning</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Meeting the Diverse Learning Needs of All Students</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Access to Resources</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Students’ Familiarity with Technology</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Emergent Themes

The data collected during interviews were analyzed. This analysis of individual interviews of school leaders revealed emergent themes. The themes that emerged under changes in leadership were administrative leadership, parents, encourage risk-taking, providing resources and support for teachers, administrators’ comfort with technology, professional development, and concerns. The themes that emerged under changes in instructional delivery were taking baby steps, deciding when to use technology, not just to replace paper/pencil, teacher flexibility within programs/platforms, teaching with technology, teacher as facilitator, and instructional planning. The themes that emerged under student engagement were access to resources, collaboration, display learning in different ways, students’ familiarity with technology, and student-centered learning. Table 5 below displays the prevalent themes that emerged from the review of the data in this study.

Table 5
Emergent Themes

<table>
<thead>
<tr>
<th>Changes in Leadership</th>
<th>Changes in Instructional Delivery</th>
<th>Student Engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Leadership</td>
<td>Baby Steps</td>
<td>Access to Resources</td>
</tr>
<tr>
<td>Parents</td>
<td>Deciding When to Use Technology</td>
<td>Collaboration</td>
</tr>
<tr>
<td>Encourage Risk-taking</td>
<td>Not Just to Replace Paper/Pencil</td>
<td>Display Learning in Different Ways</td>
</tr>
<tr>
<td>Providing Resources and Support for Teachers</td>
<td>Teacher Flexibility Within Programs/Platforms</td>
<td>Students’ Familiarity with Technology</td>
</tr>
<tr>
<td>Administrators’ Comfort with Technology</td>
<td>Teaching with Technology</td>
<td>Student-centered</td>
</tr>
<tr>
<td>Professional Development</td>
<td>Teacher as Facilitator</td>
<td></td>
</tr>
<tr>
<td>Concerns</td>
<td>Instructional Planning</td>
<td></td>
</tr>
</tbody>
</table>

Summary of the Data

The school leaders that were interviewed in this study about the implementation of the one-to-one device initiative had many similarities in their responses. In response to research question one regarding changes in leadership, respondents determined that administrative leadership, parents, encouraging risk-taking, providing resources and support for teachers, administrators’ comfort with technology, and professional development were all important components. Four of the principals also shared apprehensions that they had throughout the
digital integration process. In response to research question two regarding changes in instructional delivery, respondents determined that taking baby steps, deciding when to use technology, not just a replacement for paper/pencil tasks, teacher flexibility within programs/platforms, teaching with technology, teacher as facilitator, and instructional planning were all observed. In response to research question three regarding changes to student engagement, respondents determined that access to resources, student collaboration, displaying learning in different ways, students’ familiarity with technology, and student-centered learning should all be considered. Chapter Five will provide the summary of findings, implications of findings, recommendations for future research, and reflections of the study.
Chapter Five
Results of the Study

Purpose of the Study

The purpose of this study of the implementation of one-to-one devices was to examine school leaders’ perceptions of changes in their leadership practices, changes in teachers’ instructional practices, and changes in student engagement. A member of the central office staff and five elementary principals were asked to provide perceptions on the implementation process with their staff. School leaders also provided perceptions on how teachers were led to facilitate instruction while using one-to-one devices. The research questions that follow guided this study.

1. What do school leaders perceive as changes to the way they lead when implementing a new one-to-one device initiative?
2. What do school leaders perceive as changes in the delivery of instruction when implementing a new one-to-one device initiative?
3. What do school leaders perceive as changes to student engagement as a result of implementing a new one-to-one device initiative?

Summary of Findings

The data were collected, analyzed, and reported related to the study’s research questions. Emergent themes were identified based on the analysis. The following section identifies the findings and makes connections to reviewed literature.

Finding One. School leaders indicated on-going professional development is a change in leadership practice necessary to support one-to-one digital instruction. All the principals (100%) in this study indicated the necessity for professional development in order for the one-to-one device initiative to be implemented successfully. The participants felt that providing many on-going opportunities for professional development were essential for staff to learn the various available digital resources. Instructional technology specialists assigned to the schools as well as library media specialists and teacher experts led many of these professional learning sessions to guide teachers through the process. P1 emphasized, “We have lots and lots of conversation about how the technology fits in, what the expectation is, so that we’ve taken away all the fear because inevitably something doesn’t work” (P1, l57-59). P3 went on to say...
that, as the leader, she did not want to have an expectation without the support and knowledge for implementation.

This finding supports Whitaker et al. (2015) who found that schools should invest in staff to foster growth and development of intentional instructional change. This finding also supports Nussbaum-Beach and Hall (2012) who indicated that professional development must be put in place to help bridge the gap from current instructional practices to the vision in which learning happens through instructional technology. Through the use of technology, professional development can transform the potential to grow exponentially (Nussbaum-Beach & Hall, 2012).

Finding Two. School leaders indicated modeling technology use while learning alongside teachers is a change in leadership practice that enhances the one-to-one device initiative. The central office staff member as well as 100% of the participating principals agreed on the importance of the school leaders’ role in modeling technology use while learning together with the staff. School leaders are at different comfort levels in the technology journey, but all agreed it is important to set an example as a digital leader. CO commented, “Whether you might be a technically proficient leader or learning alongside teachers, you’re leading by showing this idea that we’re all on a learning journey” (CO, l136-138). P2 noted that as a school leader you have to model what you expect teachers to do while making sure to monitor and give support.

This finding supports Sterrett (2011) who indicated that using the information on where a school is, where it wants to go, and modeling and integrating technology systematically, the school leader can serve as a tech-savvy model to the community. This finding also supports the research of Grady (2011) who found that principals as technology leaders must set visions and goals for the school and model the use of technology. Having a solid understanding of the technology resources allows school leaders to be better able to know the reservations and challenges teachers may experience.

Finding Three. School leaders indicated a change in instructional delivery occurs when teachers identify the appropriate digital tool for the lesson in a one-to-one digital environment. The central office staff as well as four out of five school administrators noted the importance of when to use a digital tool versus continuing with a traditional paper/pencil task. The participants shared that technology should not be used just for the sake of using technology. P1, P2, P4, and P5 pointed out that not every lesson is equipped for technology, and the technology should be used for more than just a replacement of worksheets. P2 noted, “One thing
that we talk about and the one thing that we always remind each other of is that we’re using this
to enhance learning and we only need to use it if it’s the right tool to use.” (P2, l51-53). CO
stated, “I would say there are more opportunities for students to have active engagement versus
just compliance with activities when devices are used appropriately and meaningfully” (CO, l31-33).

This finding supports Firmin and Genesi (2013) who noted that digital resources must be
used as a tool to enhance instruction as opposed to planning instruction around the technology.
When focusing on the quality and quantity of digital devices used for instruction, benefits could
transpire for students (Firmin & Genesi, 2013). This finding also supports Penuel (2016) who
found the use of technology as a tool to support instruction can improve teaching and learning in
schools when provided the right resources and support.

Finding Four. School leaders indicated a change in instructional delivery occurs
when teachers function in the capacity of facilitator in a one-to-one digital environment.
Four out of five principals and the central office staff member determined that in a one-to-one
digital environment, teachers have relinquished some control to students for their learning. This
means that teachers allow students to help direct their learning in a way that meets individual
student needs and learning styles. P2 and P3 reported that teachers in this environment are
learning facilitators, which is a crucial component to transformational instruction. P5 noted that
teacher facilitation has allowed for more personalization and differentiation for students. The
review of the school division’s data also revealed that 95% of participating administrators
perceived that teachers provided students with personalized learning opportunities, used the
devices to collect real-time data, and provided students high-quality feedback (Eastern Public
Schools, 2016-b).

This finding supports Solarz (2015) who identified the need to create a learning
environment that is student-led to empower students to explore and learn themselves while
teachers monitor and provide guidance through thought-provoking questions. Students then
become responsible learners, while teachers provide immediate, personalized feedback to
students (Solarz, 2015). This finding also supports Khan (2012) who determined that the teacher
becomes even more important as digital integration allows teachers to do more teaching with
individual students who are struggling.
Finding Five. School leaders indicated a change in instructional delivery occurs when teachers plan instruction that incorporates technology in a one-to-one digital environment. The central office staff member and 100% of the participating principals suggested that one-to-one devices impact teachers’ instructional planning by making it more purposeful. School leaders determined that learning plans are intentional when devices are in the equation. P1, P3, P4, and P5 shared that while pedagogy and good teaching are still at the center of instructional practices, the one-to-one digital environment has affected teacher reflection and purposeful planning practices. P3 shared that there appears to be a correlation between instructional planning and the available technology resources. CO said, “It changes the way teachers plan to teach and approach their instructional objectives because they’re able to think beyond the tangible resources they might have on hand to a broader world” (CO, 109-111). The review of the school division’s data also revealed that 95% of participating administrators perceived that teachers provide students personalized learning opportunities (Eastern Public Schools, 2016-b).

This finding supports the research of Edwards (2014), who determined instructional delivery in a digital learning environment should allow for teacher and student mobility, including learning from students, embracing online resources, and proactively monitoring students. Teachers must analyze and practice the technology in order to effectively implement it into instruction (Edwards, 2014). In turn, teachers become more knowledgeable about their subject areas leading to greater student achievement (Edwards, 2014).

Finding Six. School leaders indicated technology-integrated instruction is a change in student engagement helping to meet the diverse learning needs of all students. Four out of five principals and the central office staff member determined that it was easier to meet the diverse learning needs of students in a one-to-one digital environment. P1 and P2 found that students with disabilities were often able to better have their academic needs met when digital tools were readily accessible. P5 noted that learning was more equitable for students for remediation or extension activities with the access to technology. CO noted that students may need to continue on a learning journey longer than others, but that is to be expected when digital tools are leveraged appropriately. P2 explained,

Using a digital device levels the playing field for students. Sometimes students might have a learning disability, sometimes students might have a weakness in an area, a
weakness that isn’t always recognized or obvious when they’re using a digital device. It allows them to level the playing field within their learning styles. (P2, l69-72)

This finding supports research by Gura and Percy (2005) who noted that the content provided to each student can be individualized and customized, tailored to each student’s needs, interests, and purposes. With personalized learning, teachers can use real-time data to accurately identify student needs and make adjustments to instructions to advance or review student learning (Gura & Percy, 2005). This finding also supports Lowther et al. (2003) who found that when students have technology devices, they are more likely to become engaged in activities where they were previously reluctant.

Finding Seven. School leaders indicated students are provided opportunities for engagement through collaboration in a one-to-one digital environment. Four out of five principals and the central office staff member discovered that student collaboration increased with the implementation of a digital environment. School leaders found that one-to-one devices afford students with opportunities to go beyond the school walls. P1, P3, and P4 shared that the digital learning environment also allows students to work in collaboration with their peers instead of completing work in isolation. P1, P3, P5, and CO found that students were able to expand learning through other modalities beyond those resources available within the school setting. P1 stated, “It allows opportunities to go outside of the classroom walls, which is beneficial to some of our students because they’re limited in their outside experience.” (P1, l6-7) P5 indicated, “They are able to think more globally and not just about what is in their classroom or community. They truly have the world at their fingertips. They can access information just by opening the laptop at their desk.” (P5, l4-7)

This finding supports Collins and Halverson (2009) who found that technology could enhance student learning through connecting and collaborating to create lifelong learning. This collaboration could occur between students, adults, and community members who work together on meaningful tasks with the use of technology (Collins & Halverson, 2009). This finding also supports Johnson and Maddux (2003) who found that technology is a means to support a collaborative community of learners.

Finding Eight. School leaders indicated a student-centered one-to-one digital environment increases student engagement. The central office staff member and 100% of the participating principals suggested that student-centered learning opportunities increase student
engagement. P1, P3, and P4 noted students should have voice and choice in not only the type of device used for a given task, but also how they are going to accomplish the task to demonstrate their understanding. School leaders discovered when students are given input for their learning then they take ownership. CO emphasized, “They’re actively taking ownership of the learning, they are leading the learning, and this idea of student-centered learning has really risen to the top as a result. It puts students in the center in a way they’ve not been before” (CO, l149-152).

This finding supports Sheninger (2016) who noted when teachers give students a choice in tools and products to create their own model to demonstrate understanding of content; the difference is an authentic product that aids meaningful learning. In turn, students gain autonomy and ownership in their learning (Sheninger, 2016). This finding also supports Solarz (2015) who indicated allowing students to have voice and choice while completing a task within a collaborative group of predetermined, mixed-level abilities helps to increase motivation, engagement, and deepen understanding.

**Finding Nine. School leaders indicated students’ familiarity with technology aids in successful technology-integrated instruction and student engagement.** Of the principals interviewed, 100% expressed that students’ familiarity with technology aids in successful technology-integrated instruction. All participating principals indicated that students have had early technology exposure, which makes a digital learning environment more engaging and easier for them to navigate. P5 stated, “A lot of the teachers would say they have those kind of moments where they realized that they needed to stop thinking that they needed to be perfect in a program for the students to have success” (P5, l128-130).

This finding supports West (2012) who determined that many students find today’s instructional practices boring, making it difficult for them to be engaged effectively. The 21st century learner is regularly connected outside of school, which is in contrast to their academic digital interactions (West, 2012). This finding also supports Nussbaum-Beach and Hall (2012) who noted that students are coming to school being asked to power down from an outside environment where learning occurs anytime, anywhere, and where students regularly pursue knowledge in networked and collaborative ways.
Implications of Findings

The findings of this study led to implications for school divisions and school administrators. School divisions continue to adopt one-to-one device initiatives. School leaders can use the study’s findings to facilitate successful implementation of one-to-one device initiatives. The following are implications to consider.

Implication One. Building-level administrators should provide professional development opportunities to assist staff along the technology integration continuum. Since building administrators know the needs of their school, professional development can be targeted specifically to meet deficit areas. School administrators often have minimum requirements for implementation such as digital portfolios; ensuring that staff are trained on the implementation helps to facilitate alignment. On-going professional development assists teachers in navigating digital tools to integrate into instruction. Administrators can also learn alongside teachers while noting what to look for during instructional observations. This implication is associated with finding one.

Implication Two. School divisions should provide on-going professional development opportunities for instructional technology integration. Division-wide professional development that is specific to school administrators as well as classroom teachers could help develop and refine technology skills needed for digital integration. Developing a way to distribute consistent information across schools throughout the school division will help to provide a message of commitment to digital integration for all staff. Since administrators and teachers have various readiness levels, division-wide professional development can provide professional growth in needed areas that are not provided at the school level. This implication is associated with findings one and two.

Implication Three. Building-level administrators should provide teachers with opportunities for observational learning of peers with a focus on integrating technology. With so many technology resources available, teachers can become overwhelmed as to how to effectively implement technology to meet students’ needs. With opportunities to see the use of digital resources in action, teachers can use this as a springboard for their own implementation. Furthermore, observational learning is a way to provide a chance for teachers to ask other teachers and students questions about their instructional technology use. These observations will help provide insight on extending collaboration efforts for students, relinquishing control,
identifying the appropriate digital tool, meeting diverse learning needs, and capturing this through planning. This implication is associated with finding three.

**Implication Four. Building-level administrators should provide teachers with support and resources for a student-led learning environment while integrating technology.** In a traditional teacher-led classroom, the teacher provides most instruction as a whole group. With student-led learning, students are able to have voice and choice about how to demonstrate their learning based on their learning preferences. Students explore and collaborate to discover rather than the teacher just providing them with the facts. This requires a paradigm shift for many teachers. With resources and support for student-led learning, teachers can be empowered to explore these opportunities for their students. This implication is associated with findings four and eight.

**Implication Five. School divisions should allot time for teachers to practice technology applications in order to effectively integrate technology in lesson plans.** Teachers are learning how to incorporate technology applications into their instruction. If school divisions establish built in time during the school day centered on technology use, educators can improve their readiness in the digital integration journey. Providing this allotted time could give teachers an opportunity to analyze and practice the technology for integration into the lesson plans. This implication is associated with finding five.

**Implication Six. School divisions should provide teachers of special populations professional development opportunities related to technology.** Teachers that have special education or English as a second language students included in their classrooms are often left without the necessary resources to effectively remediate learning objectives. On the opposite end of the spectrum, gifted students can become bored with instruction that does not extend their learning opportunities. Having division-wide professional development on technology integration for teachers who provide instruction to these special populations can assist in meeting the diverse learning needs of students. This implication is associated with finding six.

**Implication Seven. Building-level administrators should purchase technology resources for students to collaborate with others globally.** Collaborative efforts within the classroom allow students time to learn from each other; however, the larger community can help expand upon educational opportunities to enhance learning. Technology that allows for worldwide connections can be used to aid local as well as global collaboration to enhance
student learning. With the right resources, students can have application to the real world and take away authentic learning experiences. This implication is associated with finding seven.

**Implication Eight. Building-level administrators should require an increase in student exposure to technology in the learning environment.** Students should be able to see learning as an extension of their connected lives outside of school. Increasing technology applications in the classroom is important for 21st century learners since they view technology as a means to a more meaningful, engaging learning environment. With increased use of technology, teachers can allow students to demonstrate their knowledge using various technology applications. This implication is associated with finding nine.

**Recommendations for Future Research**

Demand is being placed on school divisions at both the national and state level for technology integration; more local divisions will likely take on technology integration programs similar to the one-to-one device initiative implemented by the participating school division in this study. While the size of the school divisions might differ, the implementation process may be similar. Future researchers could replicate this study across the nation to see if school leaders in other school divisions describe comparable results.

Additionally, the focus of this study was five elementary schools that participated in the first year of implementation of the one-to-one device initiative. A follow-up study could be done with the addition of secondary administrators to the administrators interviewed. This would provide a more diverse perspective on the one-to-one device initiative as well as assist with vertical alignment.

The ultimate goal for any initiative is to positively impact student achievement. Future research could involve a mixed methods study where the impact of one-to-one devices on student achievement based on standardized assessments is examined. Having data on student achievement could shape future one-to-one device initiatives.

It is expected that obstacles will be encountered while executing any new initiative. Future studies could include interview questions regarding challenges administrators may face during the implementation of a one-to-one device initiative. Responses to these questions could aid future administrators embarking on the technology journey to have knowledge about potential roadblocks to avoid.
Finally, the data obtained in this study were self-reported by school leaders responding only to those interview questions posed. In future studies, questions for the administrators could be expanded to inquire how they developed teacher leaders within their building to foster the one-to-one device initiative. Although this topic was found in research, school leaders did not mention teacher leaders in responses to the interview questions in this study. Future research could investigate the practices administrators used, if any, to have teacher leaders promote technology use within the school or division.

Conclusions

The purpose of this study of the implementation of one-to-one devices was to examine school leaders’ perceptions of changes in their leadership practices, changes in teachers’ instructional practices, and changes in student engagement. In response to research question one regarding changes in leadership, respondents determined that administrative leadership, parents, encouraging risk-taking, providing resources and support for teachers, administrators’ comfort with technology, and professional development were all important components in the implementation process. Four of the participating principals also shared apprehensions that they had throughout the digital integration process. In response to research question two regarding changes in instructional delivery, respondents determined that taking baby steps, deciding when to use technology, not just a replacement for paper/pencil tasks, teacher flexibility within programs/platforms, teaching with technology, teacher as facilitator, and instructional planning were all observed. In response to research question three regarding changes to student engagement, respondents determined that access to resources, student collaboration, displaying learning in different ways, students’ familiarity with technology, and student-centered learning should all be considered. Data gathered from this study were supported by the research in regard to on-going professional development, administrators learning and modeling technology use, identifying the appropriate digital tools, and the teacher functioning as facilitator. Research further supported the findings of planning by teachers, meeting the diverse learning needs of all students, and collaborative opportunities for students. Encouraging student-centered learning and students’ familiarity with technology was also supported by the research.
Reflections

Reflecting on this study, I am able to identify some aspects where I would have made modifications. First, I would have asked further questions of the administrators about how they developed teacher leaders within their building to foster the one-to-one device initiative. Next, I would have chosen a different time for interviewing principals, as December was a busy time period for them to allocate the time needed for the study. Then, I would have added to the interview questions presented to school leaders an inquiry about any technology implementation challenges. Finally, I would have added secondary principals to my study so I could have developed a broader knowledge base of the one-to-one device implementation across all levels.
References


Appendix A
Permission to Use Survey Questions

Crystal,

That would be great! You can use any part of the dissertation you would like. Good luck on your research.

Thanks

Brian

Brian Maschmann Ed.D.
Assistant Superintendent
Norris School 160
25211 S. 68 Street
Firth, NE 68358

Crystal,

Dr. Maschmann and I worked together on a joint dissertation at the University of Nebraska at Lincoln on 1:1 Perceptions of Administrators and Teachers. I am glad you were able to reach him and I concur with his decision. Good Luck with your dissertation and I would love to read it when you are finished.

Damon McDonald
Superintendent
Aurora Public Schools
Appendix B
Institutional Review Board Certificate

Certificate of Completion

This certifies that
Crystal Lynn Wilkerson

Has completed
Training in Human Subjects Protection

On the following topics:
Historical Basis for Regulating Human Subjects Research
The Belmont Report
Federal and Virginia Tech Regulatory Entities, Policies and Procedures

on

September 3, 2014

David Moore, IRB Chair
Appendix C
Institutional Review Board Approval Letter from University

Virginia Tech
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: November 9, 2016
TO: Ted S Price, Crystal Lynn Wilkerson
FROM: Virginia Tech Institutional Review Board (FWA00000572, expires January 29, 2021)
PROTOCOL TITLE: Perceptions of School Leaders for One-to-One Device Implementation in One K-6 Elementary School Division in Virginia
IRB NUMBER: 16-965

Effective November 9, 2016, the Virginia Tech Institution Review Board (IRB) Chair, David M Moore, approved the New Application 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: Expedited, under 45 CFR 46.110 category(ies) 5,6,7
Protocol Approval Date: November 9, 2016
Protocol Expiration Date: November 8, 2017
Continuing Review Due Date*: October 25, 2017
*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.

Invent the Future
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
An equal opportunity, affirmative action institution
Appendix D
School Division Approval Letter

December 22, 2016

Ms. Crystal Wilkerson
2308 Nettleford Way
Virginia Beach, VA 23453

Dear Ms. Wilkerson:

This letter serves as the Department of Planning, Innovation, and Accountability’s approval for your research study entitled “Perceptions of School Leaders for One-to-One Device Implementation in One K-5 Elementary School Division in Virginia.” Your request to conduct interviews regarding perceptions of change in leadership, instructional practices, and student engagement in schools that participated in a one-to-one electronic device program has been approved. Your research was approved with the understanding that all participation is voluntary, and you will not identify the names of the participants, schools, or the school division in any potential reports. As always, the final decision to participate rests with the school principals, and you are expected to discuss your study with them prior to starting your research activities.

Our approval for your study will expire one year from the date of this letter. If there are any changes to your study, you must submit the changes to our office for review prior to proceeding. It is our expectation that you will submit an electronic copy of the final report upon its completion to the Department of Planning, Innovation, and Accountability. Please send the report to [email] if you have any questions, please contact me at [email].

Sincerely,
Appendix E
Email to Participate in the Study

Dear Participant,

My name is Crystal Wilkerson, and I am a doctoral candidate at Virginia Polytechnic Institute and State University. I am requesting your help in my doctoral dissertation research by meeting with me for a face-to-face, tape-recorded interview. My study aims to investigate the perceptions of how one-to-one devices change leadership practices, change teachers’ instructional practices, and change student engagement. The population for participation in my study is elementary school principals who participated in the first year of one-to-one device initiative implementation as well as a member central office staff in one Virginia school division.

The interview should take approximately 45 minutes to complete. I am submitting in advance the interview questions for your review in order for you to be as descriptive and specific as possible.

Participation in this research is completely voluntary and all responses will be anonymous. This research will be used in my dissertation and possible publication when completed. If you are interested and willing to participate in the interview for this study, please email me a time, date, and location that are convenient for you.

Should you have any questions or concerns about the study’s conduct or your rights as a research subject, or need to report a research-related injury or event, you may contact the VT IRB Chair, Dr. David M. Moore at moored@vt.edu or (540) 231-4991. Your decision to participate will not have any effect on employment within the school division. Thank you in advance for your support and assistance in participating in my dissertation study.

With Gratitude,

Crystal Wilkerson
Phone: (757) 339-4237
Email: crystw4@vt.edu
Appendix F
Consent Form

Perceptions of School Leaders for One-to-One Device Implementation in One K-5 Elementary School Division in Virginia

Lead Investigator: Dr. Ted Price
Co-Investigator: Crystal Wilkerson

Purpose of the research project

The purpose of this study of implementation of one-to-one devices is to examine school leaders’ perceptions of changes in their leadership practices, changes in teachers’ instructional practices, and changes in student engagement. A central office staff and five elementary principals that participated in the pilot one-to-one program will be asked to provide insight on the implementation process with their staff. School leaders will also provide insight on how teachers were led to facilitate instruction while using devices. The research will identify a central office staff and principals’ perceptions of student engagement impact due to changes in instruction and leadership practices. Based on the review of literature, it is anticipated that one-to-one device initiatives increase student engagement.

Procedures

You have been asked to participate in a research study investigating the perceptions that a central office staff and elementary principals have of how one-to-one devices change their leadership practices, change teachers’ instructional practices, and change student engagement.

If you agree to participate, you will be asked to complete a fact-to-face, tape-recorded interview in a location of your choice that should last approximately 45 minutes. You are being asked for your permission to audiotape this interview, but if you prefer not to be recorded, only notes will be taken.
**Risks**

This study will involve minimal risk and discomfort. The probability of discomfort will not be greater than your daily life encounters. Risks may include emotional discomfort from answering interview questions. If at any time you feel discomfort during the interview, you can notify the interviewer. Neither the PI nor the University have funds to pay for medical or counseling services that result from your participation, and the costs of such services must be paid by the participant.

**Benefits**

No promise or guarantee of benefits have been made to encourage you to participate in this study. Indirect benefits will include the promotion of factors that influence the well being of students.

**Extent of anonymity and confidentiality**

The school division, individual schools, and selected participants will be assured confidentiality and anonymity by providing each with an assigned pseudonym. Audio-recorded responses from participants to the interview questions, once transcribed, will be emailed to them individually. The respondents will have an opportunity for cross-examination to review their responses to ensure that the transcription reflects an accurate depiction of their reflections. Once transcriptions are completed, with participants’ approval of accuracy, the digital recordings will be deleted to help maintain anonymity of all participants. Access to the data will be afforded only to the co-investigator and investigator. All data used in the final analysis for this proposed study will be destroyed upon successful completion of the dissertation defense. It is possible that the Institutional Review Board (IRB) may view this study’s collected data for auditing purposes. The IRB is responsible for the oversight of the protection of human subjects involved in research.

**Compensation**

There will be no compensation for your participation in the study.
Freedom to Withdraw

You are consenting to voluntarily participation, and may refuse to participate or not respond during any portion of the study without penalty. There will be no penalty if you choose to not participate in the study.

Subject’s Responsibilities

I voluntarily agree to participate in this study. I have the following responsibilities:

1. Be thorough and candid in responses to posed questions.

I have read the Consent Form and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent:

________________________________________________________________________
Signature

________________________________________________________________________
Date

Investigator Contact Information:
pted7@vt.edu

Co-Investigator Contact Information:
Crystal Wilkerson
Phone: (757) 339-4237
Email: crystw4@vt.edu

If I should have any questions about the protection of human research participants regarding this study, I may contact Dr. David Moore, Chair Virginia Tech Institutional Review Board for the Protection of Human Subjects, telephone: (540) 231-4991; email: moored@vt.edu.
Appendix G
Principal Interview Questions

Interview Protocol

Welcome and thank you for your participation in this study. My name is Crystal Wilkerson, and I am a graduate student at Virginia Polytechnic Institute and State University. I am conducting a study in partial fulfillment of the requirements for a Doctoral degree in Educational Leadership and Policy Studies.

This interview should take approximately 45 minutes and will include 7 questions regarding your experiences with the one-to-one device initiative you implemented during the 2015-16 school year. I would like your permission to audio tape this interview, so I may accurately document your responses. Your participation is completely voluntary. If at any time during the interview process you wish to discontinue, please let me know. All of your responses will remain confidential, and will be used to examine school leaders’ perceptions of the implementation of one-to-one devices and changes in their leadership practices, changes in teachers’ instructional practices, and changes in student engagement.

I would like to remind you of your written consent to participate in this study. I am the responsible investigator. You and I have both signed and dated each copy, certifying that we agree to continue this interview. You will receive one copy and I will keep the other under lock and key, separate from your responses. With your permission, we will begin the interview.

Interview Questions for School Leaders

1. What are some of the benefits for students in a one-to-one learning environment?
2. Describe the changes in student engagement you have observed in the one-to-one device environment.
3. Explain the key instructional expectations and/or policies regarding the one-to-one device usage in your school.
4. In what ways, if any, has the one-to-one device environment changed how students learn?
5. In what ways, if any, has the one-to-one device environment changed the way teachers teach?
6. In what ways, if any, has the one-to-one device environment changed the way school administrators’ lead?

7. Describe your overall perception of the one-to-one device initiative?