WALDEN UNIVERSITY
A higher degree. A higher purpose.

Walden University
ScholarWorks

Walden Dissertations and Doctoral Studies

Walden Dissertations and Doctoral Studies Collection

2015

Professional Development for the Use of iPads in Instruction

Daphne Marie Poore
Walden University

Follow this and additional works at: https://scholarworks.waldenu.edu/dissertations

Part of the Instructional Media Design Commons

This Dissertation is brought to you for free and open access by the Walden Dissertations and Doctoral Studies Collection at ScholarWorks. It has been accepted for inclusion in Walden Dissertations and Doctoral Studies by an authorized administrator of ScholarWorks. For more information, please contact ScholarWorks@waldenu.edu.

Walden University

COLLEGE OF EDUCATION

This is to certify that the doctoral study by

Daphne Poore

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. James LaSpina, Committee Chairperson, Education Faculty
Dr. Jerita Whaley, Committee Member, Education Faculty
Dr. Mary Howe, University Reviewer, Education Faculty

Chief Academic Officer

Eric Riedel, Ph.D.

Walden University
2015

Abstract

Professional Development for the Use of iPads in Instruction

by

Daphne Poore

MEd, Walden University, 2008

BS, Winthrop University, 1996

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

Walden University

September 2015

Abstract

Elementary teachers at a school in the southeastern United States received iPads and iPad training to improve teaching and learning in the content subject areas. Despite the iPad training provided by district technology personnel, teachers expressed a need for more content-specific training. Teachers need adequate and appropriate professional development to assist in preparing integrated computer-based technology instruction to increase student academic achievement. The purpose of this qualitative bounded case study was to explore the descriptions of 10 purposely selected 4th and 5th grade teachers who used iPads in content subjects and 1 instructional technology facilitator who provided district iPad training regarding the district's iPad professional development and implementation in instruction. The theoretical support for this study was the technological pedagogical content knowledge framework that provided an interaction among technology, pedagogy, and content knowledge. Data were collected from face-to-face interviews and lesson plans. Inductive analysis was used with hand coding to discover themes. Teachers recognized the need for ongoing professional development and collaboration with colleagues to create content-specific iPad integrated lessons. Based on these findings, a project was designed to provide teachers with a 3-day professional development to include modeled lessons, collaboration with colleagues, a shared Google Drive folder, and a schedule for ongoing professional development. These endeavors may promote positive social change by providing ongoing content-specific iPad professional development for elementary teachers that could improve computer-based technology instruction and student learning in content subject areas.

Professional Development for the Use of iPads in Instruction

by

Daphne Poore

MEd, Walden University, 2008

BS, Winthrop University, 1996

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

Walden University

2015

Dedication

This is dedicated to my amazing children, Abby and Layton, and my wonderful husband, John. Your love and encouragement inspire me to work hard and never give up on my goals.

Acknowledgments

I would like to thank my family for their support throughout this journey. Without their love and encouragement this accomplishment would not have been possible. Thank you for your patience through my tears and working endless hours. You are so amazing and I love every minute of our lives together.

I would also like to thank Dr. James LaSpina, Dr. Jerita Whaley, and Dr. Mary Howe for your encouragement and guidance throughout this process. It was with your continued support that I was able to accomplish this goal.

Table of Contents

List of Figures vi

Section 1: The Problem 1

Introduction 1

Definition of the Problem 2

Rationale 3

Evidence of the Problem at the Local Level 3

Evidence of the Problem from the Professional Literature 4

Definitions 7

Significance 8

Research Questions 9

Review of the Literature 10

Theoretical / Conceptual Framework 11

Technology Integration In Education 17

Professional Development for Technology Integration 19

iPad Implementation 24

Best Practice 26

Implications 34

Summary 34

Section 2: The Methodology 36

Introduction 36

Research Design and Approach 36

Participants 38
Selection Criteria and Sample 38
Gaining Access to Participants 38
Methods of Establishing a Researcher-Participant Working Relationship 39
Protection of Participants Rights 39
Data Collection 40
Teacher Interviews 40
Instructional Technology Facilitator Interviews 41
Documents 41
Second Teacher Interview 42
Limitations 42
Role of the Researcher 43
Setting of the Study and Participant Characteristics 44
Disassembling and First Cycle Coding 45
Reassembling and Second Cycle Coding 49
Analyzing 49
Concluding 51
Evidence of Quality 52
Findings 52
Research Question 1 55
Research Question 2 62
Research Question 3 64

Learning From Practice 65
Outcomes 69
Conclusion 69
Section 3: The Project 71
Introduction 71
Description and Goals 71
Project Rationale 75
Review of the Literature 75
Tpack Professional Development 76
Collaboration 78
Professional Development 80
Ongoing Professional Development 82
Project Description 83
Resources and Existing Supports 83
Potential Barriers and Solutions 84
Proposal for Implementation and Timetable 84
Roles and Responsibilities 85
Project Evaluation Plan 85
Project Implications and Social Change 86
Conclusion 86
Section 4: Reflections and Conclusions 88
Project Strengths and Limitations 88

Recommendations for Alternative Approaches 89
Scholarship, Project Development, and Leadership and Change 90
Scholarship 90
Project Development 91
Leadership and Change 92
Self as Scholar 93
Self as Practitioner 93
Self as Project Developer 93
Reflection on the Importance of the Work 94
Implications, Applications, and Directions for Future Research 95
Conclusion 95
References 97
Appendix A: Professional Development Plan for the Use of iPads to Enhance Instruction 115
Appendix C: Invitation for Instructional Technology Facilitators to Participate 135
Appendix D: Informed Consent for Teachers 136
Appendix E: Informed Consent for Instructional Technology Facilitators 138
Appendix F: NIH Certificate of Completion 140
Appendix G: First Teacher Interview Protocol 141
Appendix H: Instructional Technology Facilitator Interview Protocol 144
Appendix I: Content Analysis Guide 147
Appendix J: Second Teacher Interview Protocol 148

Appendix K: Letter of Approval 150

List of Figures

Figure 1: The components of the tpack framework. Reproduced by permission of the publisher, ©2012 by tpack.org..... 13

Figure 2: Samr model. Reproduced by permission of the publisher, ©2009 by hippasus.com..... 32

Figure 3: Structural coding..... 47

Figure 4: First cycle codes 48

Section 1: The Problem

Introduction

For the past three decades, schools have endeavored to increase academic achievement by integrating computer-based technology into the classroom (Sangani, 2013). Beginning in the early 1980s, personal computers (PCs) moved from home use to the educational field and became prevalent in computer labs for word-processing and educational drill and practice programs (Dettelis, 2011). Teachers no longer rely solely on their chalkboards and overhead projectors; they now have options for students to use computers. By the 1990s, Internet access became available for use in classrooms and school computer labs. The Internet revolutionized education by providing teachers with seemingly unlimited resources (Collins & Halverson, 2010). The next generation of technological advancement came with the expansion of laptop computers in the classroom (Warschauer, Arada, & Zheng, 2010). Teachers used laptops as another instructor in the classroom by setting up interactive educational websites for students to practice specific weaknesses (Parr & Ward, 2011). The classroom was becoming more interactive and collaborative and less lecture-driven. In the late 1990s, the Promethean Board and SMART Board became popular within classrooms. These interactive boards, which "combine the functionality of a whiteboard, computer, and projector into a single system," (Giles & Shaw, 2011, p. 36) allowed students and teachers to access broader educational resources. As the technologies continued to advance, schools began to integrate smartphones and e-readers, and implemented Bring Your Own Device (BYOD) initiatives (Melhuish & Falloon, 2010; Sangani, 2013). The latest revolution of

technology advancement to enter the schools was the Apple iPad. The iPad was released in February of 2010 as Apple's first hand-held tablet device, which was smaller than a laptop computer and more mobile than other technology hardware (Murray & Olcese, 2011).

The iPad has steadily become the technology of choice for educators because of the ease of access, the touch screen, and the ability to download a variety of applications for educational use (Hutchison, Beschorner, & Schmidt-Crawford, 2012). The iPad has replaced the laptop as the emerging technology due to its smaller size, lighter weight, and longer battery life (Marmarelli & Ringle, 2010). The intuitive design of the iPad makes the use, even by small children, an engaging platform for learning. According to the United States Secretary of Education, Arne Duncan, students in the 21st century must use "skills that increasingly demand creativity, perseverance, and problem solving combined with performing well as part of a team" (2007, p. 1). Teachers' use of emerging technologies, such as the iPad, in instruction encourages students' 21st century skills referred to by Secretary Duncan thus properly preparing them for the future workforce.

Definition of the Problem

Elementary teachers at a school in the southeastern United States received iPads and professional development in how to use the iPad. Administrators in the district purchased iPads and planned professional development sessions as part of the initiative to improve teaching and learning. Despite iPad training in how to use the iPad, teachers expressed a need for more content-specific training to integrate the iPad in instruction. It would be helpful to know how teachers and the technology facilitator described the

district's iPad professional development, as well as, how the teachers implemented the use of the iPad in the classroom.

Rationale

Evidence of the Problem at the Local Level

The school district's director of academic innovations and technology explained that the decision to implement iPads at the proposed research site was based on the need to support students learning 21st century skills needed to compete in this global economy (personal communication, November 14, 2012). The instructional technology facilitator, created a plan to train the fourth and fifth grade teachers who were implementing iPads at the project site. They were to receive a minimum of 12 hours of professional development on the use of the iPad before the school year began and additional hours throughout the year. However, due to budgetary and time constraints, the fourth and fifth grade teachers implementing iPads received two hours of training before the school year and one additional hour during the school year. Despite the efforts of the district to provide training to implement the iPads, teachers expressed the need for more training in implementing iPads in instruction.

The Technology Proficiency Plan of the district requires teachers to receive initial technology proficiency certification through a specific 10-hour class, and 30 hours every five years in district-provided professional development, or approved college courses. According to the Technology Proficiency Plan of the district, each school within the district is required to offer at least six hours of technology professional development on-site each year. Over the last two years, the proposed study site has offered two hours of

training that involved downloading applications from the Apple App Store, an introduction to Family Educational Rights and Privacy Act (FERPA) regulations, and proper use of search engines. The study site also offered one hour on using Educreations, a project-based inquiry application (Roberts & Streeter, 2014). The remaining required nine hours of technology training over the last two years has focused on using the electronic grade book, the new software for taking attendance, creation of teacher blogs, and the use of Edmodo, an application for communication with students and parents (Borg & O'Hara, 2008). While the district may offer professional development off-site that is better suited for implementing iPads in instruction, when given the choice, teachers tend to receive their technology proficiency renewal hours from their on-site offerings. While teachers recognize the importance of implementing the iPad to encourage students' 21st century skills, their schedules do not always allow off-site professional development. As a result of this situation, teachers continue to use traditional methods of teaching while attempting to implement the iPad for basic skills and communication with students.

Evidence of the Problem from the Professional Literature

Research on the iPad in instruction is limited because of the relative newness of the device and the rapid expansion and development of software applications (apps) designed for its use. However, a growing number of educators are touting its adoption and use; they assume that it can have a positive impact on instruction and student achievement (Murray & Olcese, 2011). Some believe this device can provide easier access for collaboration among students others think the plethora of content driven

applications can somehow lead to a high level of engagement and possibly increased academic performance (Hutchison et al., 2012; Waters, 2010). Lynch and Redpath (2012) suggested that the influence the iPad may have on academic achievement is dependent upon the implementation approach used by the teacher. This approach is directly related to the professional development and training teachers receive. Consequently, the need for research about the effectiveness and training acquired through district professional development would appear to address a local need.

According to the EETT (2010), teachers are to receive training to implement research-based instructional methods for innovative technology integration (United States Department of Education). According to Attard (2013), professional development responsibilities lie with the administration of the school. However, Northrop and Killeen (2013) reported that administrators are not providing the proper professional development for teachers to implement the iPad effectively. These authors also believe that the curriculum design and integration of technology need to be examined, data gathered, and effective changes made to improve the professional development of teachers (Northrop & Killeen, 2013). Morsink et al. (2011) found that the episodic professional development of teachers does not support the long-term goal of developing their technology proficiency. Rather, teacher training needs to be a sustained practice of project-based and collaborative activities over an extended period of time to provide teachers with the knowledge necessary to implement technology effectively (Morsink et al., 2011). Chou, Block, and Jesness (2012) also reported that integrating technology incrementally while providing ongoing professional development allows teachers the time needed to

acclimate to a technology integrated environment. Crichton, Pegler, and White (2012) suggested teachers must be thought of as learners and supported "before being called upon to use the technologies in their professional practice" (p. 29). This support can be provided through professional development, which will enable teachers to understand how to integrate technology effectively. However, Murray and Olcese (2011) found that teachers who were given iPads to implement in their classrooms did not change their practice. Rather, they relied on their current pedagogical practices, which can be effective, but is lacking for the way 21st century students learn (Murray & Olcese, 2011). Hicks (2011) purported that teachers must embrace the benefits of technology and understand that students of the 21st century are different. Students of today experience, learn, and think differently because of the saturation of technology in their everyday lives (Hicks, 2011). Therefore, students may not learn as well with current teaching practices. According to research, the learning curve of a teacher in today's technological environment doubles every 18 months (Reed-Swale, 2009). Therefore, it is imperative that teachers embrace technology integration and commit to life-long learning in technology. Integrating technology cannot be thought of as another strategy to be used in the classroom (Koehler, Mishra, Kereluik, Shin, & Graham, 2014). Consequently, teachers are in need of adequate professional development to prepare them to integrate technologies effectively within their classrooms.

Students of the 21st century have grown up in a world of technological advances. They deserve and expect a 21st century classroom with a knowledgeable teacher to guide them in using the innovative technology of their time. Prensky (2001) argued, "today's

students are no longer the people our educational system was designed to teach" (p. 1), and teachers must have the necessary technology skills and knowledge to prepare these students for the future. Therefore, the purpose of this qualitative case study was to explore the descriptions of the fourth and fifth grade teachers and an instructional technology facilitator regarding the district's iPad professional development, and the implementation of the iPad in instruction.

Definitions

The following terms are used throughout this study. In order to prevent misunderstanding, the terms are defined:

21st century skills: Twenty-first Century Skills include critical thinking, collaboration, creativity, communication, and technology literacy (The Partnership for 21st Century Skills, 2011).

Best practice: an innovative activity or method for bringing about change to student learning in an exemplary way (Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012).

Technology integration: Technology integration is the use of a variety of technology tools within content areas to encourage student learning (Dawson, 2012).

Technological pedagogical content knowledge (tpack): Technological pedagogical content knowledge is the knowledge of strategies to effectively teach specific content areas using technology (Mishra & Koehler, 2006).

Traditional methods of teaching: Traditional methods of teaching include a teacher-centered classroom of rote learning and memorization with little interaction, collaboration, or inquiry (Attard, 2013).

Significance

In a technologically-dependent environment, teachers are tasked with implementing and integrating high-tech tools such as the Apple iPad into the classroom. This is a challenge for teachers who may not possess the knowledge, skills, or the type of training necessary to implement these devices effectively. According to the Common Core State Standards (2012), technology is rapidly evolving and requiring teachers and students to adapt to the new expectations of the classroom: interactive presentations, collaboration with peers through the use of technology, and the effective use of technological tools. Students are in need of tools to create their futures and become successful in this competing 21st century, global economy (Means, 2010). The instructional use of iPad technology in the classroom has the potential to provide those 21st century tools. However, their use will require an instructional paradigm shift. For example, Ferriter (2011) found that many teachers are not using the iPad for assignments or learning activities that involve higher-order thinking skills, but merely using it for productivity such as taking roll and keeping up with grades. He also stated, "Students sitting in high-tech classrooms armed with interactive whiteboards, iPads, and handheld video cameras but staffed by teachers who cannot craft lessons that integrate the skills needed for success aren't any better off than their counterparts in unplugged classrooms" (Ferriter, p. 84). The research site for this project study is presently implementing the use

of iPads in the fourth and fifth grades and may extend this implementation to other grades in the future. Consequently, understanding effective professional development that supports implementation of iPad technology would be of great interest to the district for future planning.

Research Questions

In many schools, professional development is typically an in-school workshop or training that mostly consists of isolated work with an introduction to the specific topic but rarely involves any type of follow up meeting. A more meaningful approach to professional development would provide teachers with hands-on opportunities to collaborate and share learned strategies at intervals throughout the school year. School districts are quickly deciding to implement the iPad based on the excitement and potential the device has for increasing academic achievement and not on research. School personnel are excited about the instructional potential that the iPad presents, but many schools lack appropriate professional development supporting its use. To prepare students to be productive members of the 21st century, more emphasis needs to be placed on the digital devices that are widely available, already being used by students, and are rapidly becoming prevalent in today's workplace. Therefore, it is crucial for teachers to gain an understanding of iPad technology, its use in the classroom, and how its implementation can be supported by professional development.

The following research questions and subquestions guided this qualitative study:

1. How do the fourth and fifth grade teachers describe the district's iPad professional development?

a. How do teachers describe iPad best practices that were presented, supported, and developed in the district's professional development?

2. How does the instructional technology facilitator describe the district's iPad professional development?

    a. How does the instructional technology facilitator describe iPad best practices that were presented, supported, and developed in the district's professional development?

3. How do teachers describe their implementation of the iPad best practices from the district's professional development?

Review of the Literature

This literature review consists of two parts, the technological pedagogical content knowledge (tpack) framework, which is the theoretical/conceptual framework that guided this study (Mishra & Koehler, 2006), and the review of current literature. The literature review summarizes the current research on the broad subject of the integration of technology in education and professional development for technology integration. Then the review narrows to professional development for iPad implementations, and best practices. The best practices discussed are for technology integration in general, and best practices for professional development of technology integration.

The research conducted for this literature review was primarily retrieved from ERIC, SAGE, and Education Research Complete databases. I also used Google Scholar to locate pertinent articles. The key terms used to search were *technology implementation in elementary schools, iPad implementation, technology integration, iPads in education,*

professional development for iPad implementations, and best practices for iPad implementation.

Theoretical / Conceptual Framework

The framework that supported this study is the technological pedagogical content knowledge (tpack) framework (Mishra & Koehler, 2006). The tpack framework was adapted from the pedagogical content knowledge (pck) model created by Lee Shulman in 1986. Shulman (1986) believed that teachers' expertise resulted from pedagogical content knowledge. Content knowledge being the specific subject matter taught and pedagogical knowledge the methods and strategies used in practice. Shulman's idea was that neither content knowledge nor pedagogical knowledge alone was effective for instruction. Rather, he asserted that an effective teacher could combine content knowledge and pedagogical knowledge to effectively teach a subject area. Using Shulman's research, Mishra and Koehler (2006) added technology to the original pck model making it tpack (technological pedagogical content knowledge). Like Shulman's notion that pck represented a teacher's proficiency to teach with learned strategies in a specific content area, Mishra and Koehler posit that tpack represents a teacher's proficiency to teach with learned strategies in a specific content area using technology. Mishra and Koehler developed the tpack framework for understanding the many forms of knowledge needed to effectively integrate technology in instruction. These authors have defined the seven knowledge components for expertise and effective technology integration in the classroom. The seven knowledge components are defined below:

- Content knowledge (ck): Knowledge of a specific subject area.

- Pedagogical knowledge (pk): Knowledge of specific strategies and methods used in teaching or educational practice.
- Technological knowledge (tk): Knowledge of technology tools and resources available for educational purposes.
- Pedagogical content knowledge (pck): Knowledge of strategies to effectively teach a specific subject area.
- Technological content knowledge (tck): Knowledge of presenting subject specific content with technology.
- Technological pedagogical knowledge (tpk): Knowledge of specific strategies to teach with technology.
- Technological pedagogical content knowledge (tpack): Knowledge of strategies to effectively teach specific subject areas using technology.

In the tpack framework (Figure 1), the three fundamental knowledge components are pedagogical knowledge (pk), content knowledge (ck), and technological knowledge (tk). Instead of looking at these three knowledge components separately, Mishra and Koehler (2006) explained the importance of the complex interactions that occur between the teacher and these knowledge areas during the instructional process. Effective teaching occurs where pedagogical knowledge (pk) and content knowledge (ck) intersect forming Pedagogical Content Knowledge (pck). Effective technology integration occurs when the knowledge areas of content, pedagogy, and technology creatively interact and converge forming technological pedagogical content knowledge (tpack) (Mishra & Koehler, 2006).

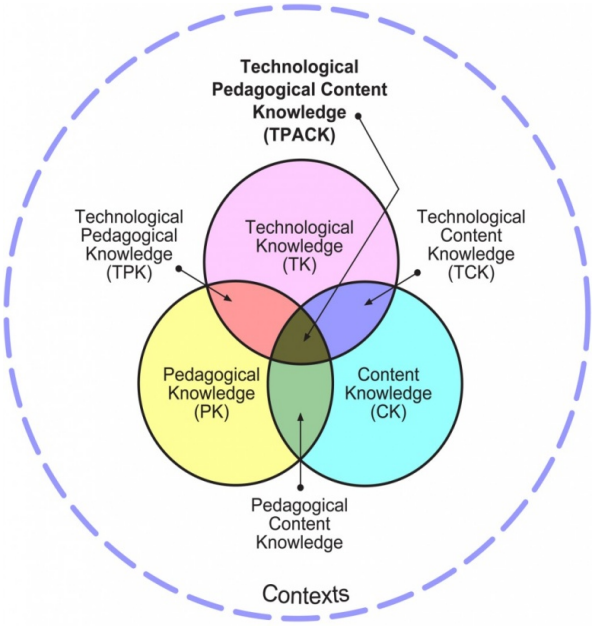

Figure 1: The components of the tpack framework. Reproduced by permission of the publisher, ©2012 by tpack.org.

Teaching with the tpack framework does not mean having the knowledge to teach technology *to* students rather it is having the knowledge to teach students *with* technology. The tpack framework is a lens to understand how content is adapted to technology and in the process re-shapes teaching, pedagogy, and instruction. Therefore, the idea of teachers adopting new methods of teaching or changing their pedagogy may be essential to effectively teaching with technology. Teachers need to reflect and identify areas in their teaching that could benefit from innovation provided by the technologies of today. With that, they also need the critical understanding that new and emerging technologies are not always the best fit for teaching certain content (Mishra & Koehler, 2006). The openness and willingness to understand and apply new technologies when appropriate is the flexibility required of teachers to integrate technology effectively into

their content areas. It is the harmonious overlap of technology knowledge, content knowledge, and pedagogy knowledge that enables a teacher to plan and develop effective lessons integrating technology into the content area. Effective professional development using the tpack framework can assist teachers with the technology, content, and pedagogy knowledge required to integrate technology within the curriculum.

Many researchers are using tpack to inform the design of professional development for teachers (Koehler et al., 2014). Allan, Erickson, Brookhouse, and Johnson (2010) found, through the use of the tpack framework in their professional development project, that teachers' technology skills increased, they experienced "positive changes in their pedagogy" (p. 42), and their content knowledge improved. Harris, Mishra, and Koehler (2009) stated that it was not sufficient to provide teachers with a technology tool and a superficial explanation of how to use it. These authors suggested that teachers must be cognizant and receptive to how the three knowledge domains interact during the process of technology integration. The tpack provides a framework and conceptual lens to examine how that interaction occurs during the professional development designed for the integration of the iPad into classroom instruction. It also serves to thematically organize the literature review that follows, which will consider current research on the knowledge domains of the tpack:

- Technological knowledge
- Technological pedagogical knowledge
- Technological content knowledge, and
- Technological pedagogical content knowledge

As well as related research on the iPad, professional development, and best practices that support digital technology integration.

Technological knowledge. Possessing a mastery of technological knowledge (tk) is an ongoing endeavor. Technology changes rapidly and mastery of technological tools can only occur with dedication to life-long learning. Therefore, Harris et al. (2009) defined technological knowledge as "developmental, evolving over a lifetime of generative interactions with multiple technologies" (p. 398). Students today were born into the digital age and have used digital devices, such as iPads, as a natural part of their environment. Teachers must proactively seek the technological knowledge necessary to stay abreast of the latest tools available to engage students in their familiar, native environment of digital technologies (Prensky, 2001).

Technological pedagogical knowledge. Technological pedagogical knowledge is the knowledge to incorporate specific strategies to effectively integrate technology. Technological pedagogical knowledge also includes the understanding of the positive implications and limitations of the technology as it relates to the specific educational activity (Harris et al., 2009). Teachers must have the knowledge to understand when and how to use the available technology tools. For example, many software programs and Web 2.0 technologies were not intended for educational use. Microsoft Word, Power Point, and Excel were originally intended for the business world, and Web 2.0 tools such as podcasts, wikis, and blogs were designed for social communication. Yet, teachers with technological pedagogical knowledge can effectively utilize these tools for educational purposes. During four iPad projects aimed at transforming pedagogy, Cochrane, Narayan,

and Oldfield (2011) found the iPad was seen as a "catalyst for pedagogical change" (p. 146). Teachers were engaging students in more technological projects and the classroom was becoming more student-centered with student-created content (Cochrane et al., 2011).

Technological content knowledge. Teachers must first have a command of their content and how that content can be delivered effectively in a traditional way (Attard, 2013). Then they need to understand how to apply appropriate technology tools to deepen the understanding and experiences for students. This understanding of how technology and content can be interwoven is referred to as technological content knowledge (tck) (Harris et al., 2009). Recently, scholars are recognizing that the content being taught influences the strategies for teaching with technology (Graham et al., 2009). The teacher knowledge required to integrate technology in one content area may not be the same in a different content area. Teachers also intuitively want to use technology as an extension activity and not to deepen students' understanding of the content (Harris & Hofer, 2011). Therefore, teachers need technological content knowledge to recognize when technology can be used to enhance their curriculum (Harris & Hofer, 2011). Hofer and Grandgenett (2012) purported that teachers need content specific professional development opportunities to increase their technological content knowledge. Having the proper knowledge of which technology to use can help teachers support content learning which is the goal of acquiring technological content knowledge (Young, Young, & Shaker, 2012).

Technological pedagogical content knowledge. Technological pedagogical content knowledge is a lens in which to view teachers' knowledge to effectively integrate technology. Having technological knowledge (tk), technological pedagogical knowledge (tpk), and technological content knowledge (tck) in isolation is not sufficient. Understanding how to use a technological tool (tk) is not the same as knowing how to use that tool for effective teaching (tpk), or how to effectively integrate it with content (tck). It is the interaction of tk, tpk, and tck, which is the underlying principle that supports teaching with technology. Therefore, the development of a teachers' tpack knowledge requires the fluency of all knowledge domains as well as their interactions.

Technology Integration In Education

According to the National Education Technology Standards for Students (NET-S), effective technology integration in the classroom occurs when students have the ability to select and use the appropriate technology to research and present on a specific topic (ISTE, 2008). Technology is the core of the 21st century and students must learn to use the digital tools available to be prepared for a successful future. Mishra, Koehler, and Kereluik (2009) reported that teachers need to develop an understanding of the relationship between the technology tools, the students' needs, and the curriculum to successfully integrate technology thus creating this environment where students are prepared for the jobs of the 21st century.

Ertmer and Ottenbreit-Leftwich (2010) believed it is important for teachers to possess the knowledge of how to use the digital tools available today but more critical, the knowledge of how to teach students to use these tools. Shapley, Sheehan, Maloney,

and Caranikas-Walker (2010) stated that classrooms with students actively using technology were more effective than classrooms with the teacher as the only user of technology. Prensky (2008) supported the idea that students need to be the users of technology for effective technology integration but also noted that when the teacher used high quality instructional practices, students benefited. Therefore, a pedagogical shift needs to occur from technology as a personal productivity tool to an integral piece of the curriculum. Wang, Odell, and Schwille (2008) contended that it is a common misconception that teachers who understand how to use technology will automatically integrate it within their curriculum. This is not the case, in fact, teachers require training about instructional strategies, and pedagogical changes that need to occur for effective technology integration (Bingimlas, 2009; Inan & Lowther, 2010). Furthermore, teachers are at different levels of technology knowledge and therefore require differentiated professional development. Varma, Husic, and Linn (2008) found that differentiated professional development based on the specific needs and abilities of the teachers increased the teachers' abilities to effectively integrate technology. Another way to differentiate professional development is through the use of a technology coach (Beglau et al., 2011). Teachers reported success in integrating technology when provided with personal time to work with a technology coach (Beglau et al., 2011). Collaboration with colleagues was also reported as increasing teachers' abilities to integrate technology effectively (Polly, 2011). Therefore, providing teachers with professional development opportunities to learn at their level of understanding, work with a technology coach, and

collaborate with peers can address the misconception reported by Wang et al. thus supporting teachers and encouraging them to effectively integrate technology.

Professional Development for Technology Integration

The literature about professional development for technology integration consistently indicates that teachers play the pivotal role in that process (Beglau et al., 2011; Ertmer & Ottenbreit-Leftwich, 2010; Inan & Lowther, 2010; Varma et al., 2008). However, teachers are often blamed for the inefficiencies and ineffective uses of technology (Hixon & Buckenmeyer, 2009). In actuality, effective technology integration of any kind within a classroom depends on the teacher's perception of the technology and the professional development provided (Ottenbreit-Leftwich, Glazewski, Newby, & Ertmer, 2010; Ertmer & Ottenbreit-Leftwich, 2010; Mueller et al., 2008). The teacher must believe the technology is a valuable resource before incorporating it into instruction (Ottenbreit-Leftwich et al., 2010). Ertmer and Ottenbreit-Leftwich (2010) suggested a strong focus needs to be placed on demonstrating ways the technology tool can be implemented within the specific content area to help teachers see the interaction between technology and their existing pedagogical content knowledge. Providing teachers with hands-on experience and demonstrated success encourages efforts to develop the technology skills necessary for implementation of curricular needs (Ertmer & Ottenbreit-Leftwich).

Wikan and Molster (2011) asserted that some teachers do not see the value that digital technologies can have on instruction and their use of it is merely because of the expectations from administration. These teachers reported a lack of confidence in their

abilities and a need for time to merge technology integration with their own teaching style. It was reported that a failure to understand the needs of the teachers was a factor for unsuccessful technology integration (Wikan & Molster, 2011). Mueller et al. (2008) reported that teachers who did not effectively integrate technology felt they needed more content-specific training. The teachers contended that the general technology training they received was not applicable to their curriculum and did not allow them to obtain the technological knowledge necessary to effectively integrate it. Therefore, it is suggested that administrators understand and provide the time for the many changes teachers must go through for successful technology integration: acquire the technological knowledge to effectively use the technology tool, acquire the pedagogical knowledge necessary to integrate technology, and acquire the technological pedagogical content knowledge to effectively integrate the new technology within the specific content area effectively (Wikan & Molster, 2011).

Miranda and Russell (2012) also pointed out that when teachers feel pressure from administration, they tend to integrate technology more often than teachers who do not experience administrative pressure. However, teachers who perceive technology integration as having a positive impact on student achievement use technology and encourage their students to use technology despite administrative pressures (Miranda & Russell, 2012). Therefore, it is important to encourage technological value for a teacher by providing sufficient professional development that involves engagement in meaningful and relevant activities (Ertmer & Ottenbreit-Leftwich, 2010; Ottenbreit-Leftwich et al., 2010).

To encourage teacher adoption of technology integration, the research consistently indicates the importance of specific technology training emphasizing the impact on student learning (Ertmer & Ottenbreit-Leftwich, 2010; Mueller et al., 2008; Ottenbreit-Leftwich et al., 2010; Wikan & Molster, 2011). Mueller et al. (2008) found that teachers need to experience success and see positive outcomes from technology integration. School-level administrators could create mentor programs, opportunities to observe successful technology integration, and professional development designed for specific classroom practice (Miranda & Russell, 2012; Mueller et al., 2008). Miranda and Russell (2012) also emphasized that it may be important for administrators to strengthen teachers' belief in their own abilities with new technology as well as their belief that the new technology can be effective in their classrooms. Using an online survey to determine teachers' perceptions of professional development for technology integration, teachers reported the need for more subject specific presentations (An & Reigeluth, 2011). These teachers also asked for lesson plans and pre-planned activities that could provide immediate implementation and practice within their classroom (An & Reigeluth, 2011). Glassett and Schrum (2009) asserted that teachers feel more confident about implementing technology tools when provided with the proper training and an encouraging environment.

For teachers to integrate technology effectively within their instruction, they must be provided with meaningful technology training and not just an add-on to the current professional development being offered (Chou et al., 2012; Coffman, 2009; Guzman & Nussbaumt, 2009). A major barrier to technology integration reported is the lack of

sufficient professional development (Smith & Owens, 2010). Wayne, Yoon, Zhu, Cronen, and Garet (2008) argued that training for technology integration should be focused and consistent. These authors report that professional development for technology integration is often more about training for the operation of a technological tool, and not focused on how to integrate it within the curriculum. Researchers suggested teachers observe colleagues who deem themselves successful at integrating technology for valuable insights (Chou et al., 2012; Hsu, 2010). Collaboration within grade-level departments could also be essential for teachers to realize effective techniques and strategies when implementing their technological tool (Hsu, 2010). Smolin and Lawless (2011) supported the idea that a focus on content and active participation is essential to professional development for effective technology integration. Other researchers suggested there is a need for an emphasis on meaningful, sustained teacher training for technology integration. Such training opportunities could benefit classroom instruction with the integration of technology tools (Chou et al., 2012; Smolin & Lawless, 2011). The most popular technology tool currently being used in classrooms is the Apple iPad (Murray & Olcese, 2011).

While many schools are implementing iPads across the nation, not all are providing the professional development support needed (Attard, 2013). Attard asserted that helping teachers develop their technological pedagogical content knowledge is important for understanding how to enhance their curriculum with technology thus improving their knowledge of effectively integrating technology. Teachers have to be provided with the tools necessary to understand when technology can be used and how to

integrate it effectively (McKenna, 2012). The iPad itself will not encourage student productivity or engagement; therefore, the teacher must have the knowledge to purposefully integrate the device within the curriculum (Chou et al., 2012). Teachers need to be provided with sustained, ongoing professional development that is relevant and focused on content (McCollum, 2011). Stand-alone workshops only have a 5% chance of changing teachers' practice (McCollum, 2011). Therefore, teachers may need ongoing professional development throughout the school year to gain a better appreciation of the iPad and ways to use it more effectively. In a study by Attard (2013), one of the participants reflected that he was already a technology savvy user but continued to find that extended, ongoing professional development was necessary for iPad implementation to be effective. The participant also found that to be effective with this new device, he needed to stay abreast of the knowledge of best practices being offered. Attard (2013) also reported that providing formal professional development could have alleviated some of the difficulties teachers reported and avoided the trial and error approach.

Using the iPad in the classroom requires the use of carefully planned, appropriate professional development to build strong technological pedagogical content knowledge in teachers allowing them to be more effective in all aspects of an iPad implementation (Attard, 2013; Chou et al., 2012). Ongoing support for teachers is necessary to keep them current with the latest technology innovations, especially considering teachers are at different levels of technology proficiency (Inan & Lowther, 2010). Novice teachers have grown up in the digital technology environment, and possess the necessary skills to adapt

to the latest technology innovations (Inan & Lowther, 2010; Perrotta, 2013). Perrotta explained that the novice teacher who has grown up in a digital world "effortlessly assimilates digital technologies" (p. 316), while older more experienced teachers "merely make accommodations into existing teaching" (p. 316). Therefore, the experienced teacher becomes an outsider looking in and the novice teacher becomes the innovator (Perrotta, 2013). This situation indicates that ongoing support for teachers is necessary to keep them current with the latest technology innovations.

iPad Implementation

In the modern classroom, there is a vast array of digital technologies, such as iPods, iPhones, e-readers, iPads, and more, that students are bringing with them to school. Students have embraced these devices as a large part of their everyday lives. With the demands of education to prepare students for the 21st century, educators are increasingly emphasizing technology in their classrooms. Research has shown that these digital technologies have become a natural and fundamental part of how students learn (Kenny & McDaniel, 2011). Therefore, integrating these technologies into the classroom environment is a necessity (Siegle, 2013).

The iPad has become the most popular digital technology tool to be implemented in schools since it was introduced to the market in 2010 (Murray & Olcese, 2011). Researchers suggested that elementary schools have encountered challenges related to the level of support provided to teachers when introducing iPads into the classroom (Chou et al., 2012; Pegrum, Oakley, & Faulkner, 2013). Chou et al. (2012) conducted a case study of a four-month pilot iPad implementation project. Challenges reported were a lack of

training in the use of the iPad, more time to become acquainted with the iPad before one-to-one implementation, and basic technical training to help students. The teachers in this study found it difficult to integrate the iPad within their instruction because they needed basic training of its use first. Similarly, Pegrum et al. (2013) reported on the challenges of iPad implementation in a one-to-one adoption. Teachers in this study reported the need for better preparation in the use of the iPad. It was noted that one teacher said she struggled to integrate the iPad and felt she did it in "pedagogically limited ways" (Pegrum et al., 2013, p. 75). Other teachers expressed feelings of being "overwhelmed and underprepared" (p. 75) to integrate the iPad (Pegrum et al., 2013). In another study, teachers were using the iPad with traditional methods; students were accessing worksheets, tests, and quizzes (Quillen, 2011). These teachers were unsure how to implement the device effectively and lacked the time needed to attend professional development. Henderson and Yeow (2012) reported that the implementation of this device should not be done hastily; rather a clear plan of action should be created. Teachers need time to become comfortable with the tool before a full implementation begins in the classroom (Henderson & Yeow, 2012). Yet, not all teachers have the knowledge or are provided opportunities to gain the knowledge necessary to effectively implement this digital device (Peluso, 2012). Murray and Olcese (2011) purported that to prepare the current generation for the 21st century, emphasis needs to be placed on current and emerging technology tools, such as the iPad. Demands for core skills such as reading, writing, and arithmetic are the same, but the way these skills need to be taught is very different (Murray & Olcese, 2011). A focus needs to be placed on the best practices

of professional development and skill development of teachers implementing iPads to ensure students are being properly prepared for the digital workforce of their future (Henderson & Yeow, 2012).

Best Practice

Best practice is a widely used term that can have many different meanings. For the purposes of this study, best practice refers to an innovative activity or method for bringing about change to student learning in an exemplary way (Ertmer et al., 2012). This study will be to explore best practices of the district's digital technology professional development program.

Best practices for technology integration. Since technology changes so rapidly, teachers must stay abreast of the best practices for technology integration. The following researchers suggested successful best practices for integrating technology as focusing on one specific content area at a time, alignment of pedagogy and technology, collaboration with colleagues, and ongoing professional development.

Focus on specific content areas. Debele and Plevyak (2012) found that teachers who developed technology projects designed for specific learning outcomes were successful at integrating the chosen technology in their curriculum. These teachers attributed their success to the focus they placed on the specific content they wanted to address. Trying to integrate technology within every subject everyday takes time and practice (Debele & Plevyak, 2012). Therefore, it is important to create a clear plan and focus for the specific learning outcomes desired, and then determine the best technology tool to use. Hammond and Manfra (2009) also believed in the importance of determining

one specific content area of focus and then determining the pedagogical techniques required for technology integration. Narrowing on one specific content area at a time creates a manageable amount of information to develop a pedagogically sound technologically integrated project.

Pedagogy-technology alignment. Hofer and Swan (2009) agreed that success of technology integration begins with a strong pedagogy-technology alignment. Teachers already have the specific instructional strategies, or pedagogy they prefer to use. Understanding how to align that pedagogy or making a pedagogical shift to align with the chosen technology is the important step needed for effective technology integration. Hofer and Swan believed this alignment of pedagogy and technology is a best practice that needs to be employed by all teachers wishing to effectively integrate technology. These thoughts support the theories of tpack by Mishra and Koehler (2006) that teachers must first have a command of their content and the pedagogy to teach it, and then align that pedagogy with the appropriate technology tool to integrate within the curriculum effectively. Engaging in a collaborative environment can enhance the alignment of pedagogy and technology (Foster, 2010).

Collaboration with colleagues. A collaborative environment of creating specific instructional goals aligned with effective pedagogical techniques, and appropriate technology tools has been shown to be successful when integrating technology (Debele, & Plevyak, 2012; Foster, 2010; Hofer, & Swan, 2009; Korenman, Korenman, & Danilina, 2009). Collaboration encourages a desire for the same outcome, creates accountability, and strengthens the rigor of the activities provided to students (Foster,

2010). Collaboration can occur between teachers or researchers and teachers. Foster found that teachers collaborating with researchers in a professional development context had a higher success rate than teachers collaborating with each other. This could be due to the fact that researchers are on the cutting edge and are experts in their field. It could also be due to the circumstances surrounding the interactions of the professional development. Researchers suggested that quality professional development opportunities that allow teachers the time to practice and time with the trainer simultaneously are more effective than stand-alone workshops (Chou et al., 2012; Hsu, 2010). Teachers who participated in a collaborative, organized professional development were found to create many new content-specific tasks (Jao & McDougall, 2015). Teachers were reported as enjoying the collaborative opportunity and remarked on the benefits of having set aside time to work together with their colleagues (Jao & McDougall, 2015). Despite the fact that collaboration is a well-documented strategy for improving teacher knowledge, teachers are not always given this opportunity (Mayotte, Wei, Lamphier, & Doyle, 2013). Elementary teachers were found to enjoy the collaboration opportunities within professional development more than the secondary teachers (Mayotte et al., 2013). This could be due to the fact that elementary teachers incorporate more group activities within their classrooms and high school teachers collaborate in departmental teams. Nevertheless, administrators can be more intentional about providing these collaboration opportunities within the framework of professional development at any grade level. Collaboration for effective technology integration, no matter the technology chosen or the

collaborators, is more effective than teachers planning alone (Chou et al., 2012; Debele, & Plevyak, 2012; Foster, 2010; Hofer, & Swan, 2009; Hsu, 2010).

Ongoing professional development. Professional development has been deemed by many in research as a key to successful schools (Tournaki, Lyublinkskaya, & Carolan, 2011). Not all professional development is successful though; there are specific characteristics that make professional development effective. The professional development must be ongoing over time, focus on specific content, and provide opportunities for collaboration (Tournaki et al., 2011). Content and collaboration have already been addressed in this review so the focus in this section will be ongoing professional development. Many workshops aimed at providing training for teachers are 1-day models that are inadequate (Tournaki et al., 2011). Tournaki et al. (2011) suggested professional development training last as long as 2-3 years for effectiveness. Darling-Hammond and Richardson (2009) found that training for teachers that lasted 6-12 months was the most effective and that 14 hours or more of sustained training was required. Gerard, Varma, Corliss, and Linn (2011) found that professional development that was sustained for over one year showed improvements in students' learning experiences, while less than a year resulted in issues that hindered successful classroom implementation. Teachers are essential to the success of students and after a one-year long professional development training, teachers strengthened their "pedagogical skills while developing a mind-set for instructional change" (Carrejo & Reinhartz, 2012, p. 36). This level of sustained professional development is a critical component to student

achievement and "when teachers stop growing, so do their students" (Picker, 2012, p. 313).

iPad implementation. Many teachers are embracing the iPad as a tool for technology integration and believe it can play a vital role but often lack the understanding of how to integrate it effectively. Peer-reviewed research is not available to describe the innovative strategies or best practices teachers are currently using to integrate the iPad in instruction. There are blogs, forums, and websites with many examples of success teachers have shared about their iPad integration but no peer-reviewed research to substantiate their claims. The following are examples of initiatives by schools around the world that have been conducted with the Apple iPad and the reported findings.

At the Marymount School of New York, the iPad is viewed as a tool for creating and not just consuming (Walters, 2011). Teachers at this school were provided with funds, freedom, and time to redesign their curriculum using the iPad. Walters reported that these teachers collaborated to develop successful, engaging activities connected to their content for their students. Similarly, Ronayne (2013) reported that students at Christa McAuliffe School in New Hampshire were more creative with their work and made deeper connections to their content because teachers embraced the use of the iPad in their classrooms. Kristi Meeuwse from Drayton Hall Elementary in Charleston, South Carolina, also embraced the use of the iPad in her kindergarten class (Apple in Education, 2010). Typically about 35% of her students entered first grade above reading level. When given a class set of iPads, she began creating leveled books to increase her students' informational text skills using an app on the iPad. Students were intrigued with the

personal stories about their interests and as a result, 100% of these students advanced to first grade above reading level. At the Flitch Green Academy, teachers encouraged students to take risks with the iPad (Apple in Education, 2010). Students were allowed to use the applications available to them in the ways they felt could help them achieve their goals. Teachers reported students as being more engaged in their work, excited to complete learning activities using the iPad, and interacted with each other more. This school reported that students were learning seamlessly even as they went home after school and parents were more involved in their child's education. The best practices noted from these iPad initiatives involve creativity, innovation, risk, time, and collaboration. These may be the traits necessary of the professional development for effective iPad integration.

Best practices for professional development of technology integration. Apple claims the use of best practices when conducting professional development for schools on the use of their products (Apple in Education, 2014). These workshops are hands-on, focused on curriculum, and presented in a variety of ways to accommodate differing pedagogical styles (Apple in Education, 2014). Apple's professional development courses are offered for all of their products and conducted by certified teachers, not just Apple technicians. Certified teachers have the experience to provide a better, more suited training opportunity. Schools can choose to set aside an entire day for the inservice, which is called School Day Inservice. They may also decide to arrange the professional development after school, which is called Twilight Schedule Inservice, or the last choice called the Twilight Series Inservice. The Twilight Series consists of two consecutive days

of six hours each. Each day is divided into three-hour sessions. The first three hours are coaching and mentoring with individual teachers in their classrooms. Then teachers are provided with three hours of professional training in a workshop environment. Before professional development begins, Apple provides a self-assessment for the school to gather information about the technology skills of the teachers. The data are then aligned with Dr. Ruben Puentedura's samr (substitution, augmentation, modification, redefinition) model (Figure 2) for technology integration to highlight the strengths and weaknesses of the teachers, but also to emphasize the training needs (2011). Puentedura created the samr model as a lens to view the integration of digital technologies. As a teacher moves through the levels of the samr model, technology becomes more prevalent as well as the technological pedagogical content knowledge of the teacher. Puentedura believes Mishra and Koehler's (2006) tpack model and the samr model can be used together to enhance technology integration.

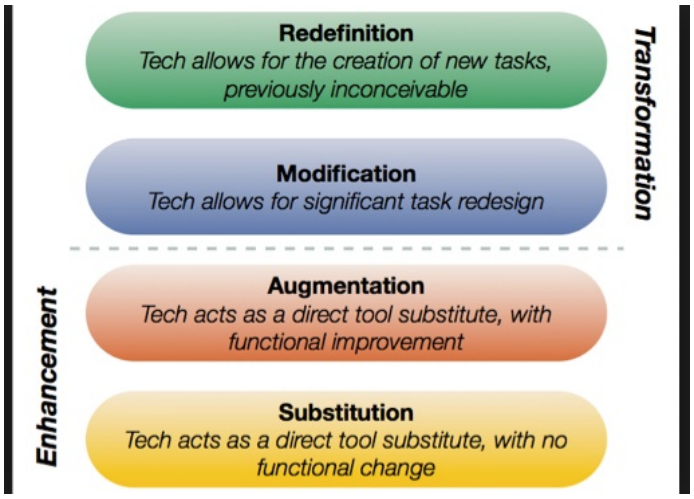

Figure 2: Samr model. Reproduced by permission of the publisher, ©2009 by hippasus.com

The first level of samr is *substitution* where the technology of choice is a mere substitute for another tool. For example, instead of students creating handwritten notes from class instruction, the teacher can provide the notes digitally, and students can annotate on the notes to enhance their understanding. The second level of samr is *augmentation* in which the technology of choice is a substitute for another tool but has functional improvement. Using the same notes example, in the augmentation stage, students can create a mind map instead of taking notes. Digital mind maps have the capability of adding hyperlinks, collapsing or expanding the notes, color-coding, adding images, and many other tools. In this case, the digital mind map is a substitute for the digital notes. The third level of samr is *modification* where the technology of choice allows for a redesign of the activity. Now the notes have been modified to allow for collaboration through social media. The last level of samr is *redefinition* in which students can create activities that were initially thought to be impossible. In this last stage of redefinition, students are given the choice of how to take their notes and the tool that suits their learning best. All notes can be combined in a presentation and repackaged for others to view. Puentedura (2011) stated that teachers could transform digital learning experiences by moving students through the levels of samr. According to Puentedura, his model can be used in conjunction with tpack to further support technology integration.

The first level of samr is substitution, which does not require anything more than tk (technology knowledge) of tpack. At the second level of samr is augmentation where we want teachers to help students get to a deeper understanding. Teachers will need professional development in the three domains of tpack: technology, pedagogy, and

content. However, nothing is needed at the intersections of these knowledge domains. The third level of samr is modification, in which teachers are now redesigning the original task and will require support and knowledge in pck, tck, and tpk. In the last stage of samr, redefinition requires the intersection of all knowledge domains to form tpack.

To see the full potential of the iPad in instruction, it may be important to examine the proficiency teachers possess in the knowledge domains of tpack, the pedagogical shift that occurs during the implementation process, and their perceptions of best practices, in the context of existing professional development programs whose principal objective is technology integration.

Implications

A possible project based on the anticipated findings of the data collection was a series of professional development sessions created to increase teacher knowledge of the use of iPads as an instructional tool, demonstrate how iPads can be integrated into instruction, and create a network of teachers who support each other and share lessons about iPad integration. This professional development might involve training of the knowledge domains of tpack to support teachers' implementation of the iPad. A website may be created as a resource for teachers with updated information on iPad implementation strategies, innovations in the classroom, and resources for content-specific lessons.

Summary

The nation is tasked with preparing students to be college ready and productive members of society. Possessing technological proficiency is a vital skill to compete in

this advanced 21st century (ISTE, 2008). Research has identified the need for proper professional development of teachers for effective technology integration (Attard, 2013; Inan & Lowther, 2010; McCollum, 2011; McKenna, 2012). The empirical evidence of implementing iPads is limited; therefore, it was important to understand how the teachers in this study implemented the iPad, their perceptions of the professional development provided to them, and the best practices developed through professional development, classroom use, and collaboration with colleagues. These phenomena were the focus of this case study.

Section 2: The Methodology

Introduction

The research design and approach used for this study is a qualitative case study. A qualitative case study is used when the researcher wants to get close to a particular situation and provide a thick, detailed description (Lodico, Spaudling, & Voegtle, 2010). This qualitative case study explored the descriptions of teachers and an instructional technology facilitator regarding the district's iPad professional development, and the implementation of the iPad in instruction. A qualitative research design was chosen over a quantitative design because quantitative research does not allow for the thorough analysis of beliefs and attitudes of the participants (Creswell, 2012). The purpose of this case study was to gain an understanding of the district's iPad professional development, and how the teachers were implementing the iPad in instruction. The remainder of this section will present the descriptions and justifications for the research design and approach, participants, data collection, and data analysis.

Research Design and Approach

A qualitative case study was chosen as the best research design and approach for this study because it seeks an in-depth understanding of phenomena with the goal of influencing change (Yin, 2013). Other qualitative approaches identified by Creswell (2012) are grounded theory, narrative research, ethnography, and phenomenology. These approaches are discussed and explanations for why they were not chosen are given.

Grounded theory is a qualitative approach in which the researcher develops a theory derived from the data collected over a long period of time (Merriam, 2009). The

goal of the proposed study is to influence change and not to develop a theory; therefore grounded theory would not be an appropriate approach for this study.

Another qualitative approach that Creswell (2012) described is the narrative approach. The narrative approach is a collection of stories or narratives of individual experiences. This approach was not selected because it is focused on exploring and reporting on the experiences of one individual and the proposed study is focused on a group of people.

Ethnography is another research approach considered for this study. In ethnographic studies, researchers are focusing on interactions of a cultural group. In ethnography, the researcher becomes a part of the cultural group being studied, looks for cultural themes, and recognizes that the setting plays a role in the study. Since the purpose of the current study is not to understand the interactions of a specific cultural group, this approach was not chosen.

Phenomenology research is about identifying the meaning of experiences according to the specific views of the participants (Merriam, 2009). In other words, phenomenology is about the essence of the experience; how the participants feel about the experience. This research approach is well suited for studying "affective, emotional, and often intense human experiences" (Merriam, 2009, p. 26). Merriam (1998) suggested that insights gained from a case study can be used to influence procedures or future research. The goal of the proposed study is to explore and gain an understanding of the phenomenon to possibly influence change in procedures. Therefore, phenomenology is

not a good fit for the current proposed study. After reviewing each approach, the best choice is the case study because it fits the goals of this study.

Participants

Selection Criteria and Sample

The purposeful sampling of participants was comprised of ten certified elementary teachers implementing a one-to-one iPad implementation at the school of study and one instructional technology facilitator who conducted professional development for the district. The project site only implements one-to-one iPads in fourth and fifth grades, which comprises ten teachers. All ten teachers agreed to participate in the study. The district employs two instructional technology facilitators to conduct professional development for the elementary schools, of which, one agreed to participate.

Gaining Access to Participants

To conduct this study, I gained approval from the Institutional Review Board (IRB) from Walden University's Review Board. Next, I submitted a copy of my proposal along with the district's Research & Information Sharing Agreement to the district's Research Department to request approval. The district's Superintendent and Director of Accountability and Quality Assurance reviewed the request and informed me via letter of approval (See appendix K). Once approval was received from the district, I contacted the principal of the elementary school and scheduled a meeting with her to explain the purpose and intent of my research. At this meeting, I requested the names and email addresses of all teachers who met the sampling criteria. I accessed the email addresses of the instructional technology facilitators from the school district's website. I emailed all

potential participants an invitation to participate in the study including a detailed explanation of the study and the expectations for the participants (See appendix B and C). As the email responses were received, I responded to those who agreed to participate and asked if there were any questions or concerns about their participation. After all responses were received, all questions and concerns addressed, I emailed each participant individually to schedule a day and time for a face-to-face interview. Interviews lasted approximately 35-50 minutes and were conducted over 1 week.

Methods of Establishing a Researcher-Participant Working Relationship

Because I did not have a relationship with anyone involved at the study location, establishing a relationship was vital to ensure trust and receive accurate perceptions during the interviews. To foster the positive relationship between the participants and me, I ensured the participants confidentiality and explained their role as the participant through the Informed Consent Form (See appendix D and E). By developing trust, the participants were more inclined to invest their personal time to provide in-depth details.

Protection of Participants Rights

Good research relies on protection of participants' rights, their confidentiality, and a guarantee that they will be protected from any type of harm (Creswell, 2012). To ensure that I had a full understanding of the necessary steps in protecting participants, I completed an Internet based course that was given by The National Institutes of Health (NIH) Office of Extramural Research (See appendix F). This training was completed July 31, 2012, with a certification number of 946809. I provided a written copy of a detailed description of the purpose of the study and asked for informed consent from participants.

According to Hancock and Algozzine (2011), informed consent ensures confidentiality. Therefore, the informed consent form provided to participants included assurances that they will not be harmed in anyway, physically or emotionally, their responses will be completely confidential, and their right to withdraw from the study at any time. During interviews, participants were informed of the recording device used for transcription. Lodico et al. (2006) suggested using pseudonyms when collecting data to ensure the confidentiality of the participants. Since the participants were volunteers, they were given the option to exit the study at any time.

Data Collection

Teacher Interviews

Yin (2013) described the strengths of open-ended, face-to-face interviews as structured and insightful. Teacher interviews were used to gain an understanding of the district's iPad professional development through the descriptions of the teachers, and the iPad best practices that were presented, supported, and developed in the district's professional development. Teacher interviews were conducted using an interview protocol (See appendix G). This protocol helped focus the interviews and maintain consistency in the data collection process. The date, time, and location of the interviews were agreed upon with the interviewee and myself. However, all interviews occurred outside of instructional time after school. Interviews were conducted over a 1-week period with each interview lasting approximately 35-50 minutes. The interviews were digitally recorded and transcribed verbatim immediately following.

Instructional Technology Facilitator Interviews

Instructional technology facilitators of the district observe teachers to understand professional development needs as well as provide the technology professional development for the district. This interview provided insight through the instructional technology facilitators' descriptions of the district's iPad professional development, as well as the iPad best practices that are presented, supported, and developed in the curriculum of the district's iPad professional development (See appendix H). This interview was conducted during the same week as the teacher interviews, but at the district office. This interview lasted approximately 40 minutes and was transcribed verbatim immediately following.

Documents

To gain a better understanding of how teachers are currently implementing the iPad best practices learned and acquired through the district's iPad professional development, participant lesson plans were analyzed using a content analysis guide (See appendix I). Teachers were asked for one lesson plan where the iPad was being used. Teachers had the choice of emailing their plans or submitting a paper copy. Seven of the teachers brought a paper copy of their lesson plans to the interview, while the other three emailed a copy. Paper documents will be kept in a folder locked in my desk at home and electronic copies will be kept on a local file on my password-protected personal computer. All documents will be kept for 5 years.

Second Teacher Interview

After lesson plans were reviewed, a follow-up interview was conducted with the six teachers who provided a lesson plan. A second interview protocol was used in addition to questions that were generated from the information gathered from the review of lesson plans (See appendix J). These interviews provided more depth about how the teachers were implementing the iPads to enhance instruction and what they stated that they had learned and acquired in the district's iPad professional development. These interviews lasted approximately 25-35 minutes and were transcribed verbatim immediately following.

Limitations

There were limitations to this case study. It was conducted in one elementary school where teachers use iPads with students in fourth and fifth grades. A sample of 10 teachers and one instructional technology facilitator were interviewed. All teachers were asked to provide a lesson plan where the iPad was being used, however, only six teachers provided one. All teachers and the instructional technology facilitator were interviewed once and the six teachers who provided a lesson plan participated in a follow-up interview. The data will only reflect the instructional practices of those six teachers. Since this study was conducted with one school and limited participants, it cannot be generalized to other settings. The readers of the study can determine transferability.

The initial professional development for teachers when they first received iPads was over two years ago. It was difficult for the teachers to remember the specific aspects

of that training. Therefore, the data were limited to the selective or telescopic memories of the participants.

Role of the Researcher

I was a teacher for 12 years in the same school district where the elementary school of study is located. However, I did not teach at the particular school in the study or with anyone currently teaching at the school. I have no relationships with any member of the staff and currently teach technology classes to pre-service teachers at the college level. My interests are with technology integration and the use of iPads to enhance instruction. This is a bias I possess; therefore, I kept a reflective journal of my thoughts and feelings, as they occurred to be aware of them during the data collection and data analysis phase of this study.

Data Analysis

Yin (2011) described a five-phased cycle of analyzing qualitative data as: (a) compiling, (b) disassembling, (c) reassembling, (d) interpreting, and (e) concluding. Saldana (2009) described two cycles of coding methods as *first cycle* and *second cycle*. I will explain how I used Yin's analyzing cycles and Saldana's coding cycles to analyze my data. During the compiling phase, I organized all pieces of data; teacher interview transcripts, content analyses of lesson plans, instructional technology facilitator interview transcripts, and follow-up interview transcripts were printed and collated. The first cycle method used during this compiling phase was *attribute coding* (Saldana, 2009). Attribute coding is the process of logging basic information collected about the participants and

study including the setting of the study, participant characteristics, and the format of the data.

Setting of the Study and Participant Characteristics

The elementary school of study is three years old and has had iPads for each fourth and fifth grade teacher and student, since the beginning. Ten classroom teachers and one instructional technology facilitator were interviewed. Seven of the teachers have been at this school for three years and have had iPads for each student in their classroom since the beginning. One teacher was a first year teacher just out of college with no experience using iPads one-to-one in the classroom. Another teacher has been teaching for five years, but this is her first year at this school. She also did not have any prior iPad experience in the classroom. The last teacher was at this school from the beginning, but taught in second grade the first year and has been in fourth grade for the last two years. As a second grade teacher, she had a teacher iPad, but her students did not have iPads. The instructional technology facilitator was a teacher in the school district for 18 years, but had no experience with iPads in the classroom. She has been an instructional technology facilitator for five years and has worked with the project site since it was opened three years ago.

Teacher interviews were conducted in a conference room at the project site while the instructional technology facilitator interview was conducted in a conference room at the district office. Each teacher was asked to provide a lesson plan in which the iPad was being used, however, only six teachers provided a lesson plan for analysis. After lesson

plans were analyzed, a follow-up interview was conducted with the teachers who provided the lesson plans.

In the following sections, a description of phases two through five and second cycle coding will be detailed for each data point including initial teacher interviews, instructional technology facilitator interview, content analysis of teacher lesson plans, and the follow-up teacher interviews.

Disassembling and First Cycle Coding

To begin analysis of the initial teacher interviews, instructional technology facilitator interview, content analysis of teacher lesson plans, and follow-up teacher interviews, Yin's second phase of disassembling was used. Disassembling the data is a process of making the data more "manageable by analyzing only that portion of the text that appears related to the specific topic" (Yin, 2011, p.186). Yin cautions that this process could lead to ignoring important data. Therefore I thoroughly reexamined the data many times until all relevant data was coded. I used Saldana's first cycle coding methods of structural coding and In Vivo coding to identify Level 1 and Level 2 codes while disassembling the data. For structural coding, I used each research question as the topic of inquiry when analyzing the data. The In Vivo codes that exemplified a similar concept were discovered and used.

Level 1 codes are initial codes or open codes that can be very similar to the original words of the participants. To begin this Level 1 coding, I read through all interview transcripts to gain an overview perspective then reread while writing "first impressions" (Saldana, 2009, p. 4). I then read through the content analysis and follow-up

interviews to again write my first impressions of the content. Some examples of first impressions are: trial and error, learn as you go, guinea pigs, model lessons, work together, share ideas, professional development not good, professional development not effective, communication, learning curve, collaboration, minimal professional development, collaboration, differentiation, and research. After coding all 11 interview transcripts, 6 lesson plans, and 6 follow-up interview transcripts for these initial first impressions, I began disassembling the data to begin labeling and forming codes. The disassembling process consisted of reading through initial codes and categorizing similar data over and over again until all first impressions were coded. After reading and rereading all disassembled data, I was able to create 16 Level 1 codes: grade level planning, model lessons, work in teams, professional development not content specific, pedagogical strategies, best practices, summer professional development, no plan for professional development, minimal professional development, trial and error, collaboration, leveled groups, student engagement, research, differentiation, and communication. After reading and rereading each of the Level 1 codes, I began to see clear categories and used structural coding again to create the Level 2 codes.

Level 2 codes are at a higher level of conceptual understanding and were identified by creating categories from the Level 1 codes. As I read and reread the Level 1 codes, I used structural coding to organize the data with the research questions. This structural coding enabled me to create seven categories of Level 2 codes: a need for teacher collaboration with iPad use, a need for teacher-student communication, relevant professional development in an ongoing process, ongoing support for teachers using

technology with resources, understanding of pedagogical strategies and best practices, teacher self-directed learning, and students more engaged with iPads. I aligned each research question and subquestion with the corresponding Level 2 codes (figure 3).

Research Questions	Corresponding Codes
1. How do fourth and fifth grade teachers describe the district's iPad professional development? a. How do teachers describe iPad best practices that were presented, supported, and developed in the district's professional development?	o relevant professional development in an ongoing process o a need for teacher collaboration with iPad use o a need for teacher-student communication o teacher self-directed learning o ongoing support for teachers using technology
2. How does the instructional technology facilitator describe the district's iPad professional development? a. How does the instructional technology facilitator describe iPad best practices that were presented, supported, and developed in the district's professional development?	o a need for teacher collaboration with iPad use o a need for teacher-student communication o understanding of pedagogical strategies and best practices
3. How do teachers describe their implementation of the iPad best practices from the district's professional development?	o a need for teacher collaboration with iPad use o a need for teacher-student communication o understanding of pedagogical strategies and best practices o students more engaged with iPads

Figure 3: Structural coding

After structural coding was completed, I reread transcripts again looking for In Vivo codes that exemplify the seven categories of Level 2 codes. In Vivo coding is a method to "prioritize and honor the participant's voice" (Saldana, 2009, p. 74). These words and phrases give credibility to the Level 2 codes that were created. Figure 4 is a visual representation of the first cycle codes. A description of Yin's third phase of reassembling and Saldana's second cycle coding are described in the next section.

Level 1 Codes	Level 2 Codes	In Vivo Codes
• Grade level planning • Model lessons created together • Work in grade level teams • Collaboration • Leveled groups	A need for teacher collaboration with iPad use	• "we team plan" • "grade level collaboration" • "planned a lesson together in grade levels" • "plan together and share ideas" • "I really rely on my team" • "bounce ideas" • "takes stress off one person" • "we really had to rely on each other for help"
• Communication	A need for student-teacher communication	• "communication with Edmodo" • "using Edmodo for communicating with their students and parents" • "Edmodo to really communicate with our students effectively" • "Edmodo has definitely encouraged more communication between my students and myself"
• Professional development not content specific • No plan for professional development	Relevant professional development in an ongoing process	• "the district hasn't taught me anything" • "I can't think of a single time the district provided a professional development that was beneficial" • "learning process for everyone, even the district people" • "it would be nice to have a go to lesson"
• Minimal professional development • Summer professional development is better	Ongoing support for teachers using technology with resources	• "I go to technology conferences over the summer to really learn about the iPads" • "I use a lot of things that I have learned during summer conferences" • "it needs to be more of a make it and take it" • "I get more from summer classes"
• Inconsistent understanding of pedagogical strategies • Inconsistent understanding of best practices • Research • Differentiation	Understanding of pedagogical strategies and best practices	• "I guess when we worked in our groups to present things" • "they didn't really give us any best practices" • "I can't think of any pedagogical strategies that we learned in the district's professional development" • "I guess they taught us how to teach our students how to research correctly" • "I guess they taught about research and independent learning"
• Trial and error	Teacher self-directed learning	• "learn as you go" • "guinea pigs" • "learned on the fly" • "learned on our own"
• Student engagement	Students more engaged with iPads	• "immersed in it" • "more engaged in the content" • "keeps them interested " • "engaged the entire time" • "more fun and engaging"

Figure 4: First cycle codes

Reassembling and Second Cycle Coding

All coded data were reassembled into categories based on the derived Level 2 codes for the third phase of data analysis. While reassembling data based on these Level 2 codes, constant comparison was used to question why data were coded and categorized the way they were and pattern coding was used to combine similar codes together in a more meaningful way. This process enabled me to decide if a code should be broadened or changed. Initially, a need for teacher collaboration with iPad use and a need for student-teacher communication were separate codes, however, I decided to combine them into one code. If teachers or students are working collaboratively, they are also communicating. I also decided to combine understanding of pedagogical strategies and best practices, and teacher self-directed learning under the relevant professional development code. The last Level 2 code, students more engaged with iPads, is only significant data from follow-up interviews. Teachers did not elaborate on the engagement of students using the iPads in the initial interviews. This data also does not align with any of the research questions therefore this code was discarded. The themes that have emerged from the codes are collaboration and relevant professional development in an ongoing process.

Analyzing

In the fourth phase of analyzing, the reassembled data were interpreted and meaning given in a descriptive interpretation. During this fourth phase, I examined the themes between each source of data to discover the meaning of the data.

Teachers were trained using collaboration as a key component; however, it did not appear to be a specific strategy intended by the instructional technology facilitator for student use. Rather, it appeared to be a strategy used to encourage teachers to rely on each other and collaborate since using the iPads was new to everyone involved. Teachers, however, employed this strategy of collaboration with their students while engaged with the iPads. This could be due to the fact that collaboration is a known effective pedagogical strategy and best practice used by many. All six teacher lesson plans incorporated some type of collaborative activity with the students. All ten teachers mentioned the idea of working together in grade-level teams, or collaborating, positively when planning or sharing ideas. This appeared to be a common practice among all teachers in the fourth and fifth grades.

Relevant professional development in an ongoing process was a theme with many relations to the data. Most teachers expressed the need for professional development and relevant training to fully support the use of iPads in the curriculum. New teachers and teachers moving into a grade with one-to-one iPads seemed to rely on their team for help and expressed a desire for more professional development. The district provided initial professional development, but seemed to be deficient in follow-up trainings. Four of the ten teachers discussed trainings being provided at faculty meetings, but just a couple times a year, and it was only to provide apps that are acceptable to use. All teachers stated that they did not receive any content-specific training for use with the iPad. In fact, all training appeared to be general for both grade levels. Many teachers said they seek out training during the summer. The district does provide a summer technology conference in

which teachers may attend to gain more knowledge about using the iPad or technology in general. Many teachers commented that this conference was very beneficial. Teachers also acknowledged the fact that they do research on their own and share ideas with each other about interesting and innovative ideas or strategies for using the iPad in the classroom.

In relating to the research questions guiding this study, teachers desire more relevant professional development that can enhance instruction. The instructional technology facilitator acknowledges that using iPads in the classroom are new to everyone involved and admits there is a learning curve. Teachers provided a variety of responses when asked about the best practices presented and supported by the district's digital technology professional development program, which simply means they have different interpretations of the term. Some stated communication, collaboration, and research as best practices, while others stated that no best practices were presented.

Concluding

The final phase is concluding or drawing conclusions from the entire study. Yin (2011) described several examples of concluding research: calling for new research, challenging conventional generalizations and social stereotypes, new concepts or theories, making substantive propositions, or generalizing to a broader set of situations. Each research study is unique; therefore, the conclusion is based on the inferences made by the researcher.

Evidence of Quality

Throughout the study, a personal reflective journal was kept to document personal thoughts, feelings, and ideas. This reflective process helped me to become aware of my own biases when collecting and analyzing the data and enhances the credibility of the study. Yin's (2011) five-phased cycle of analyzing and Saldana's (2009) two cycles of coding were used throughout the data analysis process. These rigorous processes of coding, analyzing, uncoding, and recoding ensure credibility of the established themes. Triangulation of the data was also used for validity and reliability of the study (Creswell, 2012). I examined all sources of data in an effort to provide evidence supporting the established themes.

Yin (2013) maintained that the search for discrepant evidence is a vigorous, skeptical part of the entire research process. This skeptical way of thinking caused me to double-check my data. Discrepant data challenges or disconfirms the findings. Research question #1, subquestion a stated, "How do teachers describe iPad best practices that were presented, supported, and developed in the district's professional development?" and research question #3 stated, "How do teachers describe their implementation of the iPad best practices from the district's professional development?" The teachers had varying responses about the best practices presented and varying responses about the best practices implemented. Therefore these two research questions are discrepant cases.

Findings

The data for this study were collected from a purposeful sampling of 10 certified elementary teachers implementing iPads in their classrooms and the instructional

technology facilitator who presented professional development to these teachers. The data were analyzed to answer the following research questions:

1. How do fourth and fifth grade teachers describe the district's iPad professional development?
    a. How do teachers describe iPad best practices that were presented, supported, and developed in the district's professional development?
2. How does the instructional technology facilitator describe the district's iPad professional development?
    a. How does the instructional technology facilitator describe iPad best practices that were presented, supported, and developed in the district's professional development?
3. How do teachers describe their implementation of the iPad best practices from the district's professional development?

Based on the data analysis of teacher interviews, the instructional technology facilitator interview, and examination of lesson plans, two major themes emerged when exploring the descriptions of the teachers and instructional technology facilitator regarding the district's technology professional development. These themes were professional development in an ongoing process and collaboration.

To better understand the findings of this study, I will provide some background of the district's professional development program. It consists of 10 hours of required initial professional development in a specific training for integrating technology within the curriculum. This training provides instruction for teachers to utilize software programs

for digital presentations. This instruction is not specific to the iPad, rather more exclusive to a desktop or laptop computer. The intention of this initial training is for teachers to integrate the technology within their curriculum. After the initial professional development, teachers are required to have 30 hours of renewal technology credits every 5 years. These renewal credits can be in district-provided professional development or approved college courses. Each school is required to provide at least 6 hours on-site each school year, however, the content of these hours is not specified. The project site is an elementary school servicing kindergarten through fifth grade where all teachers have one iPad for teacher or student use and the fourth and fifth grade students each have an iPad for their own use. The fourth and fifth grade students are expected to use these iPads in the classroom all day and are allowed to take them home every night. This school opened three years ago. Teachers were supposed to receive 12 hours of iPad training before the school year started and an unspecified number of hours during the school year. The exact number of professional development hours teachers received is unknown, but teachers commented that they received a few hours before school started. During the second and third year of existence, teachers received the required six hours of professional development for technology proficiency renewal; however, it was not always specific to iPads. The project site did not offer teachers any training during the summer, but the district hosts the Upstate Technology Conference every summer for two days where presenters are invited to share about technology in general. Teachers in the district can attend the Upstate Technology Conference for free, but must sign up for the classes they wish to participate in. Class sizes are limited so reservations must be made to ensure

availability. Over the last two summers, there were 13 iPad specific presentations for teachers to choose from during the two days of the conference. The district also provides Summer Institute, which is professional development all over the district all summer long. Over the last two summers, the only technology options at the Summer Institute were about using the Promethean Board.

Research Question 1

Research Question 1: How do fourth and fifth grade teachers describe the district's iPad professional development?

Professional development in an ongoing process. When asked to describe the district's iPad professional development, teachers' responses were that the initial professional development was beneficial and meaningful to them. The initial iPad training was conducted at the project site right before students returned to school from summer break. There were nine teachers in the fourth and fifth grade at that time, seven of those nine are still teaching in the fourth and fifth grades. Two teachers that were interviewed are new to the school this year. One of those teachers is a brand new teacher just out of college, and the other teacher came from another state. The last teacher that was interviewed started at the project site when it first opened three years ago, but in second grade. The three teachers that did not start in the fourth or fifth grade did not receive any type of initial iPad training. They were given their teacher iPad and classroom sets just like the other teachers that had been teaching it. Debbie, who has been at the project site from the beginning, said that "we've been doing it for three years and these poor new teachers haven't gotten anything." It was very difficult for the new

teachers. They relied heavily on their team to help them set up the iPads since they received no training at all. Tracy, who is new to the school, stated, "I haven't gotten any professional development for using the iPads, unless you consider my team, they have taught me a lot." The original seven teachers were a part of the initial iPad training and were given instruction on how to set up their iPads, download apps from the district's approved app store, set up students' email accounts, download and check out virtual books from Follet Bookshelf, and use Edmodo (Borg & O'Hara, 2008). The teachers who received this initial training commented that it was helpful and most beneficial because it was hands-on.

Since the teachers had never used iPads in the classroom before and some had never used an iPad for personal use either, the initial set up was valuable. Understanding how to download approved apps from the district's app store was also beneficial. As Jennifer explained, "we can't just go in and download whatever we want." She continued to discuss how they could only download approved apps that are free, but if they wanted an app that cost money, they could simply ask permission. If the apps are approved, the district makes the purchase and pushes the app out to those teachers and their students' iPads. This process was explained and demonstrated at the initial professional development training. Teachers found the district app store to have a plethora of useful apps that are easy to download.

The initial professional development also provided training for how to set up email accounts for each student, which "takes a long time, each iPad has to be set up individually." This process is very time-consuming because the teachers cannot do it

during instructional time. They can only set these accounts up before or after school. The first year, the teachers were not able to begin using the iPads for a couple of months because of the set-up process. They would stay after school to set up the individual student iPads, which took a significant amount of time. “The set up was very hard and time consuming. It took several weeks to get all of the iPads ready for the students.” Then they had to wait for parents to attend a mandatory meeting about Internet safety, email accounts, and protection of the iPad. After all setup was complete, and parents attended the meeting, then the teachers could give the iPads to the students. The setup is easier now that the teachers have had them for a few years. Debbie said, “by the second year, it was easier. We were able to set them up faster and start using them sooner.” The administration did not put any pressure on teachers to use the iPads right away. Any pressure teachers felt was simply because they wanted to start using the iPads as soon as possible. “There were no real timelines from administration for using them, it was just an expectation that we would use them. It’s more us wanting to get them started.” Teachers commented that the expectation was to see the teacher and students using the iPad and that they were able to do that by the time administration began looking for it.

Another training teachers received in the initial professional development was about Follett Bookshelf, which is how students download and check out virtual books. “They showed us right there how to do it, so I guess that was helpful.” Many teachers commented on the usefulness of hands-on demonstrations.

The last training at the initial professional development three years ago that teachers received was on Edmodo (2008). Edmodo is an app used like a learning

management system. Teachers can post assignments, comments, quizzes, games, and much more. Students can complete and upload assignments and quizzes, post comments or respond to others' comments, and play educational games related to specific content. The training for this app was "good because they came in, we set up our classes right there, and that was great." Edmodo was mentioned a lot as being the most beneficial training they received, not for the training, but the actual app. Teachers really enjoyed using this app with their students as a communication tool. Teachers used Edmodo for the first two years, and were trained on using Google Classroom for the most recent school year. Google Classroom was supposed to take the place of the Edmodo app for all learning management needs. Teachers have transitioned, and commented that they like Google Classroom.

Overall teachers commented that the technical training for initial set up was "beneficial, but what we do now is mostly trial and error" and that it is a "learning process for everyone, even the district people." Comments were made that if an issue came up, the teachers relied on each other for help. One teacher out of the ten suggested that if there was an issue or a need, they could express it to the principal, she would communicate with the district, and they would send someone to the school. Most of the other teachers demonstrated a sentiment of being "thrown to the wolves", "figured it out though, mostly on our own", and "guinea pigs." One teacher commented that communication with the district is not good. No one provided an example of a time there was a need and the district came to help.

After the initial technical training for using the iPad, teachers were put into grade-level groups and asked to create a lesson plan using the iPad. This was a difficult task in that no prior training had been given. “They put us in grade level groups and said to plan a lesson. That was it. They didn’t tell us how to use them or how to plan a lesson integrating them, they just said plan a lesson.” The positive aspect of creating this model lesson was the fact that teachers were able to plan it together. One teacher stated, “We were all new to the school and new to using iPads so it was good to work together.” The instructional technology facilitator stated that she did not give instruction or examples for how to integrate the iPad within a specific subject area. Her goal was for them to realize that “none of them had the experience of working with the iPad and that they would have to rely on each other for help.” The teachers agreed that it was very helpful to work together when planning this model lesson, however, expressed a concern that this was the only time they were given training in this way. “After that time, we haven’t had another one like it.” The district has provided the required six hours per school year of mandatory technology training to maintain technology proficiency, however, teachers do not find this training to be helpful. Most teachers commented that this training was about a new app they could use or websites the students could and could not visit. Many teachers expressed a desire for more professional development. “I think if they came throughout the year and gave us good training, like one new thing a month or something, that would be good.” One teacher stated that she would like the district to create lessons and provide them for the teachers. Another teacher commented that creating really good iPad

integrated lessons was time-consuming and having better training or instantly applicable lessons would be helpful.

The teachers already possess content knowledge (ck) about the specific subject areas they teach, pedagogical knowledge (pk) for strategies of how to teach, and technological knowledge (tk) of the tools and resources available to them. What they desire is technological pedagogical content knowledge (tpack) or the combination of ck, pk, and tk to have knowledge of strategies to effectively teach specific subject areas using technology.

The instructional technology facilitator commented that implementing iPads at the project site was modeled after schools in Florida; however, when asked for that research, she could not find it. She did say that the research was about teachers working together and that she encouraged that collaboration in the initial professional development training. Teachers commented that "they just really leave us to figure it out on our own", and "it was poor planning on the part of the district." Another teacher felt the district did not do any research ahead of time, but just gave the iPads and said to use them in their classes. "I think it would have been helpful if the district had done some research beforehand and figured out how to help us better." The district did provide the initial training, which lasted over a 2-day period and the teachers found this training to be beneficial. There were no follow-up trainings of the same caliber for teachers. The instructional technology facilitator stated that she had planned to visit the project site more often, but schools asking for specific training on technology are a priority.

Teachers commented that although the training received for implementing iPads was beneficial, it was not content specific. Teachers who were at the project site from the beginning received the initial training, "but now we rarely see them, maybe three times a year." Many teachers made the same comment that they receive training a couple of times a year, but that it is "rarely iPad specific" or content specific. Susan explained that the district trains them on "specific apps or online resources, which is good, but doesn't really help me in the classroom." She continued by saying that she really just wanted them to help her with "how to use this thing with real content." Jan also said that the training from the district is "not content specific at all." John also felt that the district was not prepared to provide effective professional development and stated that, "I don't think they know what they are doing so they can't tell us what to do." Teachers expressed great frustration about this lack of training and expressed desire for more content-specific professional development.

The district hosts a summer professional development for technology called the Upstate Technology Conference for two days each summer. This conference is open to anyone who would like to apply to present. It covers a wide array of technological topics, which includes iPad integration. Most of the presenters are teachers from the district, with a few college professors, and representatives of professional organizations. Many of the teachers interviewed reflected on how great the presentations were at the summer conference and that they learned more from it than the professional development at the project site. Susan found that the summer training was "more beneficial, it's teachers that are actually using iPads, so they have real-life experience." Other teachers felt the same

way and expressed a request for the district to offer training like the summer conference at their school during the school year. The training is designed for teachers across the spectrum of abilities in integrating technology such as the iPad. Built into the training sessions are opportunities for teachers to share lessons and strategies for the integration of the iPad to enhance instruction.

Research Question 1, Subquestion a: How do teachers describe iPad best practices that were presented, supported, and developed in the district's professional development?

Varied interpretations of best practices. When the teachers were asked how they would describe iPad best practices presented by the district, there were a variety of answers. Some of the teachers felt that collaboration was a best practice presented by the district. They expressed that working and planning together was a best practice. Many also stated that communication and research were best practices while others stated that the district did not present any best practices at all. It was clear that they all had their own interpretation of best practices. Being a novice researcher, I did not clarify best practice for my interviews and therefore received a variety of responses. It is evident by the teachers' responses that best practices were not made clear in the iPad professional development training and teachers were left with their own specific pedagogical strategies.

Research Question 2

Research Question 2:How does the instructional technology facilitator describe the district's iPad professional development?

Learning curve and collaboration. The instructional technology facilitator stated that she and one other colleague are responsible for the training of over 50 elementary schools. They divide up the responsibilities and train the teachers based on requests from principals. They are responsible for the mandatory training that all teachers must have when first entering the district as well as all technology training that occurs within the elementary schools in the district. The majority of the training that the instructional technology facilitator provides is based on Promethean boards and using laptops in schools. She was assigned to the project site and presented the initial iPad training three years ago when the school first opened. She explained that the teachers had never worked with iPads in the schools before or each other so she knew that "there was going to be a big learning curve for everyone." According to her, the first goal she had when presenting the initial professional development for iPads at the project site was collaboration. "I didn't give them any specific instructions as far as a subject area or anything, I just wanted them to see that none of them had the experience of working with the iPad and that they would have to rely on each other for help." Her second goal was to train the teachers to use Edmodo (2008) for communication with their students. She said that she had planned to present more training to the project site, however, time did not allow.

Research Question 2, Subquestion a: How does the instructional technology facilitator describe iPad best practices that were presented, supported, and developed in the district's professional development?

The instructional technology facilitator listed Internet safety, apps related to specific content and collaboration as iPad best practices. She expressed how important it was for the teachers to understand and recognize the safety precautions for Internet use with elementary students. Another best practice was teachers' ability to locate appropriate apps that are specific to the subject area content of each teacher. Lastly, the instructional technology facilitator expressed the importance of collaboration with colleagues. Her main goal was for teachers to work together in grade level groups and learn to use each other as resources for finding and sharing iPad related materials.

Research Question 3

Research Question 3: How do teachers describe their implementation of the iPad best practices from the district's professional development?

Instructional content. Teacher lesson plans were analyzed and follow-up interviews conducted to understand the iPad best practices implemented. Since the idea of best practice was interpreted in different ways, the lesson plans were analyzed for instructional content. Of the ten teachers, I received six lesson plans. There was one math, one reading, one science, one writing, and two social studies lessons. Two of the teachers were using the iPad, one for taking anecdotal notes and working with small groups, the other teacher was using the iPad as a tablet to write on the Promethean board. The other four teachers were not using the iPad at all, only the students. The math lesson incorporated specific math apps differentiated for students' knowledge levels. This math lesson demonstrated technological content knowledge or knowledge of presenting subject specific content with technology. The writing, science, and social studies lessons all

incorporated student research. Students were given specific instructions and allowed to use their personal iPads to find the information, which demonstrated technological knowledge or knowledge of technology tools available for educational purposes. The teachers were using the iPad as a digital research device. All teachers used differentiation for leveled abilities and collaborative groups. Four of the lessons incorporated students creating digital presentations, while the other two lessons were using the iPad as a digital substitution for a traditional way of teaching. In one of the social studies lessons, students used an app that allowed for the creation of a digital video with information from a picture of an inanimate object. The teacher created videos for students to use as research, and students created videos to share information with their classmates. This content was shaped by the iPad by making inanimate objects into digital presentations. The social studies content was coming alive on the page. “Using the iPad makes the content more fun and engaging.” This teacher demonstrated technological pedagogical content knowledge by using strategies to effectively teach social studies using the iPad. The iPad was not an add-on device; rather it was pivotal to the overall project. All of the teachers expressed the idea that using the iPad was more interesting and engaging for the students and they did not want to teach without them.

Learning From Practice

Through careful analysis of the data, three major themes emerged when discovering the needs of teachers using the iPad for instruction. These themes included collaboration, professional development, and ongoing professional development.

Collaboration. With the time constraints teachers are under during a regular school day, it can be difficult to find time to collaborate with colleagues. Each of the teacher participants remarked on a time they shared ideas about an app or a way to use the iPad with each other and that the collaboration was invaluable. "We like to collaborate with each other. We will stop each other in the hall or talk at recess or lunch about an idea we have." Teachers commented that they work together in grade level groups to plan lessons, and having that collaboration made planning for implementing the iPads easier and less stressful. "Jennifer remarked that collaboration and planning as a team "takes stress off one person." All of the teachers in one way or another explained how working together was helpful and they relied on each other when planning for using the iPad in their instruction.

Professional development. While interviewing the teachers, a need for relevant professional development was made clear. According to the teachers involved in the initial iPad training at the project site, planning a lesson together in grade-level groups was beneficial and they gained ideas, but they had to do more work in order for it to be successful in their classroom. A common desire for many teachers was for the professional development to be given in a way that it could be instantly used in the classroom. For example, Wendy discussed how in college she created a webquest for a specific course, which is a very interactive unit for students. However, she spent many weeks creating one webquest and explained that she does not have time to create more. "It would be nice if the district technology people would create webquests or something like it for us and we can just instantly implement them." John had a similar comment in

that he would like the professional development to be more in a "make it and take it" style. "I mean, we sit and listen to these people present about great ideas to use our iPads, but when we leave, none of us have the time to create a lesson on all of that stuff we just learned about. I wish they would create the lessons for us and show us how to do it and then maybe give us the actual lesson and materials to do it ourselves." All ten of the teachers commented that much of their success was "trial and error", and that they all learned from each other. Each one described how they would try something they read or heard about; if the lesson was successful, they would share it with their colleagues. The teachers also discussed the frustration with the time involved in a trial and error approach and agreed that instantly applicable professional development would be beneficial for more successful implementation of iPads in instruction.

Teachers also commented that they would benefit from content-specific professional development. All ten of the teachers stated that no content-specific training was given. One teacher commented that she "needs content"; while others stated that having "content-specific training would be nice." The teachers are learning about specific apps and ways of using the iPad, but not to enhance instruction.

Several teachers voiced concern that the professional development was not suited to teachers' specific needs. Sarah stated, "I think the professional development should be differentiated for teacher knowledge. I mean, I am pretty good at figuring things out on my own and other teachers are still learning how to do simple things. I think we should be split into groups based on our technology proficiency." Mary mentioned that she often does not ask questions at a professional development because she is embarrassed and

feels her questions are "silly." "I know these young teachers get frustrated with us older teachers, but we didn't grow up with this stuff. I feel like when we ask so many questions we are wasting their time. I would like to be in a group that I can feel comfortable asking those dumb questions." Good pedagogical practice is to differentiate for the varying abilities within the classroom; perhaps differentiating for teachers' varying technological abilities could be helpful.

Ongoing professional development. Ongoing professional development is essential for teachers' continuous improvement of implementing iPads in instruction. All of the teachers mentioned that the professional development offered by the district is not sufficient. Many of them actually used the term "guinea pigs" when referring to the professional development for using iPads. Jennifer stated, "We are the only elementary school in the entire district using iPads one-on-one and I feel like they gave us two days of training in the beginning, but now we rarely see them." Several of the teachers mentioned that they would like to have frequent training throughout the school year and during the summer. Technology changes rapidly and if teachers are expected to use it in their classrooms effectively, they need to be given the tools necessary. Jan said, "These kids are the digital generation. They will be expected to use these technology tools in the workplace, and I feel like it is my duty to prepare them the best I can. I am not ashamed to say that I need training, lots of training." All teachers expressed an overall open-minded sentiment. These teachers are not afraid of change in fact they welcome it.

Outcomes

The problem this study addressed was that teachers in the local school expressed the need for more content-specific training for use of the iPad in instruction. The purpose of this study was to explore the descriptions of the teachers and the instructional technology facilitator regarding the district's iPad professional development, and the implementation of the iPad in instruction. The teachers expressed that the initial professional development training was the most beneficial because it involved grade-level collaboration, and hands-on lesson creation; however, there was no follow-up professional development for ongoing training. The teachers revealed the desire for more collaboration with colleagues for exchange of ideas and iPad lesson creation, hands-on training for content-specific lessons using the iPad, and ongoing professional development for use of the iPad to enhance instruction throughout the school year. A 3-day professional development series was designed to provide teachers with foundational information for integrating the iPad in instruction through an understanding of blending their pedagogy, content, and technology knowledge. Teachers who are willing to share their iPad-integrated lessons will model them during the training. Finally, teachers will be given time for collaboration with colleagues for lesson creation. An ongoing professional development schedule was created for continuous training throughout the school year and will be shared with administration and the instructional technology facilitator.

Conclusion

This qualitative case study explored teachers' and the instructional technology facilitator's descriptions of the district's iPad professional development program, and the

implementation of the iPad in instruction. To gain a better understanding, teachers implementing iPads in their classroom were interviewed, the instructional technology facilitator who presented professional development to these teachers was interviewed, and teachers' lesson plans were analyzed. According to the findings, the initial iPad professional development three years ago was helpful, but there has been no follow through with what teachers perceive to be relevant training. Teachers desire collaboration with colleagues, and relevant ongoing professional development to implement the iPad to enhance their instruction.

Section 3: The Project

Introduction

The purpose of this qualitative case study was to explore the descriptions of 10 fourth and fifth grade teachers and one instructional technology facilitator regarding the district's iPad professional development, and the implementation of the iPad in instruction. Through the findings, it was revealed that teachers collectively desire collaboration opportunities with colleagues for iPad integrated lesson creation, hands-on training for content-specific lesson creation, and professional development that is ongoing throughout the school year. Teachers expressed the idea that collaborating with colleagues was beneficial and that collaboration was a reason for success in implementing iPads within their instruction. The teachers were also passionate about a desire to learn more and participate in ongoing professional development that would allow them to integrate the iPad to enhance their instruction. Furthermore, many teachers shared a desire for hands-on training to create their own lessons for each of the specific content areas they teach. Therefore, the purpose of this project was to provide professional development training that included content specific strategies and collaborative time to create relevant lessons for integrating the iPad to enhance instruction. Section 3 will describe the professional development plan, the goals and content of the project, a review of the literature, and implications for social change.

Description and Goals

The theoretical/conceptual framework for this study is the technological pedagogical content knowledge framework or tpack (Mishra & Koehler, 2006). The

premise of tpack is for teachers to be proficient to teach with learned strategies in specific content areas using technology. The initial professional development provided to the participants was beneficial; however, the district did not provide follow-up training. In order to determine whether or not there was a need for follow-up training, it was important to speak with the teachers. Therefore, teachers were interviewed, the instructional technology facilitator was interviewed, and lesson plans were analyzed. After thorough review of the data, specific professional development improvements could be provided. Teachers possessed many of the knowledge components of tpack, but did not demonstrate the knowledge of blending those components together. Teachers demonstrated content, pedagogy, and technology knowledge, as well as, pedagogical content, technological content, and technological pedagogical knowledge. Therefore, I concluded that a 3-day professional development series would provide teachers with the collaboration they desire, and the assistance needed to blend the knowledge components of tpack they possess to integrate iPads in specific content areas to enhance instruction. The goals, outcomes, and objectives of this project study are as follows:

Program Goals

1. Provide training to educate teachers on the foundations of the use of iPads to enhance instruction in specific content areas.
2. Provide teacher-created and teacher-modeled lessons in each of three content areas.

3. Provide teachers with the opportunity to collaborate with peers while developing lessons that can be incorporated within their classroom and content area.
4. Develop an online resource through Google Drive with teacher-created lessons readily available for use or modification.
5. Provide a schedule for ongoing professional development throughout the school year.

Program Outcomes

1. Teachers will be able to demonstrate the foundations of using iPads in the classroom to enhance instruction.
2. Teachers will be able to demonstrate the skills necessary to implement the use of iPads to enhance instruction in specific content areas.
3. Teachers will collaborate with peers to develop lesson plans for using iPads in specific content areas in their classroom.
4. Teachers will have access to an online resource of content aligned, iPad-integrated lessons for implementation within their classroom.
5. Administrators and the instructional technology facilitators will have a schedule to follow for ongoing professional development throughout the school year.

Program Objectives

1. As a result of the introduction to iPad use to enhance instruction in specific content areas, teachers will be able to identify the strategies that make an effective iPad integrated lesson.
2. As a result of modeling from teachers who are already implementing iPad use to enhance instruction in specific content areas within their classrooms, teachers will be able to use the strategies learned within their own iPad-integrated lessons.
3. As a result of the time spent with peers, teachers will create 8-10 lessons that can be implemented upon return to the classroom.
4. As a result of the professional development, teachers will have an online resource of iPad integrated, content-specific lessons to immediately implement within their instruction or modify to meet the specific needs of their students.
5. The professional development will provide the administrators and instructional technology facilitator with a schedule for ongoing professional development throughout the school year.

Through the professional development training, teachers will learn how to use the iPad to enhance instruction in specific content areas, develop lessons that can be incorporated within their classroom and content area, and share their lessons, experiences, and expertise with one another.

Project Rationale

The purpose of this qualitative case study was to explore the descriptions of teachers and an instructional technology facilitator regarding the district's iPad professional development, and the implementation of the iPad in instruction. The lack of effective training is a barrier many teachers face when implementing technology in their instruction (Bingimlas, 2009). Teachers received training to use the iPad, but expressed the need for more training in implementing iPads. Teachers desired more training for use of the iPad to enhance instruction, and more collaboration time with colleagues to create content-specific iPad integrated lessons. Therefore, the intent of this project was to provide teachers with a foundation for using iPads to enhance instruction in specific content areas, teacher modeled lessons to assist them with integrating the iPad in instruction, time to create lessons aligned with content areas, collaboration opportunities with colleagues, and a schedule for ongoing professional development throughout the school year. Although some teachers feel comfortable integrating the iPad, many would benefit from training sessions, and opportunities to collaboratively create content specific lessons.

Review of the Literature

This literature review was based on the intent of the project and included the following search terms: *tpack professional development, strategies for iPad integration, iPad professional development to enhance instruction, mobile technology, collaborative professional development, professional development for teachers' technology proficiency, continuous professional development, and sustainable professional*

development. These terms were searched using ERIC, SAGE, and Education Research Complete databases. Saturation for the project literature review was reached through the research of these terms and resource databases. This review includes four topics: tpack professional development, collaboration, professional development, and ongoing professional development. Within these three topics, professional development support for iPad integration, and strategies for integrating the iPad to enhance instruction are explored.

Tpack Professional Development

Technological pedagogical content knowledge (tpack) framework constitutes the essential knowledge for teachers to successfully implement technology in their practice (Mishra & Koehler, 2006). Technology training is often focused on the specific device being used rather than the strategies and content being taught. The findings of this project study echo the sentiment of technology training being focused on the device and not the content. The instructional technology facilitator who presented the professional development training focused on how to use the iPad, but not on strategies to integrate it with specific content. The teachers reported that the training they received was not content specific at all, but more about the iPad and how to use it. Technological pedagogical content knowledge addresses this issue of overemphasis on technology devices and develops teachers' capabilities to integrate technology with learned strategies and a specific subject area in mind (Chai, Koh, & Tsai, 2013). Teachers possess content knowledge (ck), pedagogical knowledge (pk), and a variety of technological knowledge (tk). It is the blend of the three knowledge domains that is needed to develop the tpack.

The development of tpack requires modeling, support, and structured training (Alsofyani, Aris, & Eynon, 2013). This framework applies to professional development training for the use of mobile technology and how to integrate that device with pedagogy and content. Alsofyani et al. found that teachers made better connections to technology integration and how it connected to pedagogy and content, when teachers who were successful with integrating technology presented example lessons. The presenter of the professional development training could also model the use of the technology device and how it can be implemented with pedagogy and content in mind (Figg, & Jaipal, 2013). The teachers of this project study also reported that they preferred learning from teachers who were actually using the iPad and that it was more realistic when the information came from someone who had actual experience. Chai et al. stated, "student learning could be enhanced when teachers design tpack integrated lessons" (p. 38). Furthermore, the activities created with tpack in mind changed the way students approached learning. They were more immersed with the content and had a deeper understanding of the subject matter. This modification in students' learning could also encourage more professional development training where teachers are immersed in the blend of technology, pedagogy, and content (Stover & Veres, 2013). Alsofyani et al. (2013) asserted that teachers should be surveyed after professional development to assess their perception of the training, their intent to use the information learned or developed, and their self-efficacy to use the technology within their practice. It may be important to understand the teachers' view of the professional development training and the needs they may still desire.

Collaboration

Collaboration is the act of sharing teaching practices to improve teaching and learning for the success of all students (Adams & Mix, 2014; Foltos, 2015; Musanti & Pence, 2010; Parnell, 2011). Teaching can be an isolated, time-consuming profession, in which professional development is the common method of teacher quality improvement. Teachers may work alone in their classrooms all day with little to no time for collaboration. However, Foltos suggested that collaboration is the essential key to improve teaching and learning. In fact, Musanti and Pence believed that teachers cannot improve their practice alone; they must engage in meaningful collaboration to construct new knowledge. Collaboration is a tool to help teachers improve and better help their students (Parnell, 2011). Patrick, Elliot, Hulme, and McPhee (2010) indicated the importance of collaboration for "encouraging reciprocal learning" (p. 2). This reciprocal learning may encourage relationships among teachers with shared experiences and allow for a safe environment to learn new skills. Teachers in the project study stated collaboration with colleagues as a key for their improved learning when using the iPad for instruction. In fact, Wilson and Demetriou (2007) found that positive collaborative relationships enhance the professional development opportunities provided to teachers. They can work together within a framework of professional development to encourage and support one another. Teachers can possibly overcome barriers to technology integration and build confidence by working with a peer and sharing successes and failures (Wright, 2010). Dudeney et al. (2013) suggested that teachers work in professional learning networks to share and gain new knowledge. Researchers suggested

teachers crave support and collaboration when integrating digital technology such as the iPad and creating an information exchange network for communication with other teachers would be helpful (Ally, Grimus, & Ebner, 2014; Dudney et al., 2013; Pegrum et al., 2013). This "online hub" (p. 76) could encourage teachers to be more active in their learning process (Pegrum, 2013). Teachers sit through hours of training and leave with nothing but the knowledge gained. Time is always an issue for teachers and finding the time to use the knowledge gained from professional development to create a properly aligned, pedagogically sound lesson is difficult. In fact, the findings of this project study reflected that teachers wanted a resource of content-specific lesson ideas, aligned with the standards that they could use or modify in their classrooms. Sugar and Slagter van Tryon (2014) also found that teachers wanted a lesson they could instantly implement in their classroom. These teachers indicated that a shared resource for pre-made lessons integrating technology and properly aligned with content standards would be helpful. Onguko (2014) referred to this shared resource as a "content repository" (p. 80) and explained that the content available must be knowledge-based and adaptable to the needs of various users. This shared resource could be a stepping-stone for teachers to immediately implement a content-aligned lesson integrating technology and then expand on the idea to make it their own. Mobile technology has changed the landscape of education and the traditional means of training teachers is no longer an effective practice (Twining, Raffaghelli, Albion, & Knezek, 2013). There is a need for collaborative opportunities within the school culture and the professional development training offered.

Professional Development

It is essential that teachers receive high-quality professional development and the support necessary to successfully implement technology (Martin et al., 2010). Hu and Garimella (2014) stated, "the developments in mobile learning technology and the emergence of these technologies in schools require a transformation in the skill set of K-12 teachers who will be required to design or deliver education utilizing these new technologies" (p. 51). Teachers' skills can be enhanced with professional development training. This professional development needs to be relevant, in other words, aligned with standards, provide appropriate pedagogical strategies, and be directly related to practice (Martin et al., 2010). Pegrum et al. (2013) found that pedagogy should be the focus of professional development for teachers working with mobile technologies. A combination of teachers' pedagogy or strategies for teaching and their technology skills is referred to as technological pedagogical knowledge. Technological pedagogical knowledge is useful when teachers use their known strategies for teaching and their technology skills to develop strategies to integrate a technological device. Targeted training should include the opportunity for teachers to create lessons aligned to their standards, and specific to their content. The technology should be embedded within the content areas for teachers to expand their knowledge and teaching strategies (Ally et al., 2014). Incorporating technology, content, and pedagogy is the blend required for teachers to effectively integrate technology within the curriculum. The 21st century teacher must develop the necessary skills to engage students in learning with 21st century mobile devices. Ally et al. (2014) stated that the 21st century teacher needs "models and methods of pedagogy,

concepts of differentiation, community building" (p. 15), and to actively participate in online networks to further their knowledge. Pegrum et al. (2013) also believed that modeling is important and suggested professional development training consist of technologically advanced teachers modeling integrated lessons and mentoring colleagues. Kopcha (2012) found that when teachers were provided with a mentor in a professional development setting, their overall vision for personal technology integration improved. These teachers felt more confident in their abilities and more accepting of this new technology because they were given the chance for success. Teacher adoption of mobile technologies is crucial to the success within the classroom (Ismail, Azizan, & Azman, 2013). Teachers must be confident in their abilities before they can feel confident to integrate a digital device such as the iPad. Hu and Garimella (2014) reported that teachers used a more teacher-centered approach before professional development training for the use of the iPad. After receiving training from mentors, teachers began using more student-centered approaches for multiple modes of presentation, as a tool to engage students, and to solve real-world problems (Hu & Garimella, 2014). It is evident the need for professional development training and strategies to enable teachers of the 21st century to use the current digital mobile technologies with their students. Schuck, Aubusson, Kearney, and Burden (2012) reported on three important strategies for successful implementation of mobile technology: lessons must have a real-world application, students' needs must be met through personalization of pedagogical strategies, and time for collaboration. Teachers should exchange ideas with colleagues, while students become consumers, and producers of digital content to share across the world. Hu and

Garimella (2014) believed that the mentoring, support, and meaningful learning should be sustained for an extended period of time.

Ongoing Professional Development

Ongoing professional development is a widely discussed topic in research and has a variety of specific interpretations (Matherson, Wilson, & Wright, 2014; Polly, Neale, & Pugalee, 2014). Ongoing professional development or sustainability has been measured in the number of training sessions and in years. Carrejo and Reinhartz (2012) defined sustained professional development as a year long, while Roehrig et al. (2011) found that only teachers' attitudes changed after one year, but classroom practice improved after two years. Polly et al. found a positive impact on instructional practices after 84 hours of professional development over 13 months. While these studies have shown improvement after 1-2 years of sustained professional development, Cifuentes et al. (2011) believed that sustained professional development was defined as 6 years of ongoing training. Other research does not specifically define the number of hours, sessions, or years, but insist that it must be continuous throughout the school year for teachers to build their knowledge (Fisher et al., 2012; Lumpe et al., 2012; Matherson et al., 2014). Professional development is typically a one-shot training with little to no follow-up, which is unsuccessful at generating instructional change (Roehrig et al., 2011). Teachers require the time to build their knowledge, engage with the concept, and have the opportunity to self-assess their progress (Matherson et al., 2014). It is with time and hands-on experience that teachers can develop the confidence necessary to be successful at integrating technology. Martin et al. (2010) found that "greater PD fidelity was associated

with higher-quality lesson plans and higher student achievement" (p. 55). Martin et al. also suggested that for professional development to have an impact on student achievement, it must have an impact on the teachers first. The professional development required for this impact is intensive, but research shows the sustained practice, and ongoing support is essential (Martin et al., 2014). Martin et al. also suggested specific strategies for effective, sustained professional development for iPad integration. These strategies are modeling of instructional techniques with the iPad, community building through discussions and lesson plan sharing, hands-on technology use, and a real connection to practice through specific alignment with standards. Pegrum et al. (2013) as well as Hu and Garimella (2014) echoed these same strategies in their research. Pegrum et al. suggested time to engage in the content with the iPad, and shared lessons through an online resource. Hu and Garimella suggested teachers have mentors for sustained hands-on practice over time. Fisher et al. found that "sustained focus, with quality professional development, clear expectations for implementation, and support for change, are important" (p. 562). It is clear that teachers require on-going professional development to adequately learn and then successfully implement mobile technologies within their instruction.

Project Description

Resources and Existing Supports

The resources needed for this project study are already in place in the school. All 4th and 5th grade teachers have their own iPads, there are two Promethean boards in the library for presentation purposes, and the school is wired for Internet connections. The

superintendant and administrative staff provided permissions to conduct this study and therefore demonstrate their support.

Potential Barriers and Solutions

A potential barrier could include the teachers' resistance to attend professional development training for use of the iPad. This professional development is mandatory for teachers, as it will be conducted on teacher workdays. The thought of training on a workday could be another barrier since teachers are already limited on time. However, the intent is for teachers to walk away with several created lessons that can be used in their classroom, as well as a shared digital database of other lessons, so it is feasible that they will be more willing to participate.

Proposal for Implementation and Timetable

The project study will be implemented during a 3-day professional development series. This project includes a Power Point presentation demonstrating the use of iPads in effective classroom instruction, and selected participants will share successful experiences integrating the iPad in a specific content lesson (See appendix A). A timeline was created to indicate the events of the 3 days (See appendix A). The 3-day professional development will last from 8:00-3:00 each day and teachers will be given an agenda of the training detailing the events of the day. I will also share a Google Drive folder with participants that will include the Power Point presentation, helpful resources, and teacher-created lesson plans.

Roles and Responsibilities

My role, as the project study creator, will be presenter and facilitator. Teachers who were interviewed will be asked to provide several iPad integrated lesson plans in math, science, and social studies. I will determine which lessons align with the training and would be good to share. The teachers whose lessons align well with the training will be asked to model their lessons and demonstrate their expertise during the training. I will also provide an agenda for each day, necessary handouts, and access to the shared Google Drive folder. The administration of the school will provide access to the library for the presentations, and my hope is that the participants will provide the intrigue, positive attitude, and desire to learn.

Project Evaluation Plan

At the end of each session, participants will be asked to fill out an evaluation with a simple scale from one to three: one is not beneficial, two is somewhat beneficial, and three is very beneficial (See appendix A). In addition, teachers will be asked to provide open-ended, specific information about the lessons they created, and suggestions for future professional development trainings. A final evaluation will be given to the teachers after they have had time to implement their created lessons reflecting on what worked, what they would change for next time, and any suggestions they may have for other teachers. These evaluations will provide administrators and the instructional technology facilitator with the information needed to make necessary changes in training and better meet the specific needs of the teachers.

Project Implications and Social Change

The key stakeholders for this study include the administrators of this school, instructional technology facilitators, teachers, and students. The administrators and instructional technology facilitators will learn strategies for future professional development presentations, teachers will gain knowledge for implementing iPads within their instruction, and students will benefit from the new knowledge their teachers gained, hopefully resulting in greater achievement. Technology integration in schools is a 21st century necessity and teachers' knowledge of those skills helps to further advance our students to compete in a global economy. This study could contribute to social change locally by providing a structure for effective professional development when integrating the iPad in instruction. Globally, this study could contribute to social change through Internet-based collaboration tools. I will set up an initial Google Drive folder for teachers to access iPad integrated lessons created during the professional development training. The intent of this folder is to be a continued shared space for collaboration of iPad integrated lesson plans for specific content areas organized by grade level. This shared resource could be turned into an online collaboration tool for worldwide access.

Conclusion

This project was created based on data collected and analyzed from teachers and instructional technology facilitators. The results of the study conclude a desire for collaboration with colleagues, and relevant professional development that is ongoing throughout the school year. A 3-day professional development series was designed to provide a solution to the needs discovered. The following section details the strengths and

limitations of the project, recommendations for alternative approaches, personal reflections, and directions for future research.

Section 4: Reflections and Conclusions

Project Strengths and Limitations

This project was created to address teachers' needs for collaboration with colleagues for content-specific lesson creation for use of the iPad to enhance instruction, and ongoing professional development throughout the school year. Professional development is intended to provide learning opportunities for teachers (Parnell, 2011). However, most of these opportunities are only a few hours to a day in length, with little chance for teacher growth (Carrejo & Reinhartz, 2012; Polly et al., 2014; Smylie, 2014). Carrejo and Reinhartz (2012) found that professional development needed to be sustained for a year before teacher growth was noted. Polly et al. reported that 84 hours of professional development training over 13 months was the duration needed for a positive impact on instructional practices. While Smylie states, "most professional development opportunities that teachers experience consist of formal short-term or one-shot workshops… intensity and duration of learning experiences are low" (p. 102). Teachers also work in isolation, but require collaboration in learning-communities to engage in meaningful practices to construct the necessary knowledge (Foltos, 2015). In this project, I address the needs of teachers through a hands-on, collaborative presentation. Teachers have the opportunity to plan several content-specific iPad integrated lessons with their grade-level team, as well as collaborate with other grade levels for vertical alignment. Additionally, teachers who are using the iPad in instruction will model their iPad-integrated lessons for all teachers who are expected to use iPads in their instruction. Teachers are allowed an opportunity to see how other teachers are implementing the iPad

in instruction. A real-time demonstration by a colleague allows teachers to make a meaningful connection to how they would implement the iPad in their own classroom instruction. Finally, a Google Drive folder was created as a shared resource, which offers teachers the opportunity to modify lessons to meet the needs of their students, or share their own lesson ideas. The shared drive is an opportunity for collective continual growth.

One limitation of this project is that I will be reliant on teachers to volunteer to share their iPad-integrated lessons during the professional development training. It is possible that teachers may not feel comfortable or confident to model their lessons. I also will ask for a lesson from each content area, which may not be feasible with teachers' content responsibilities. Teachers who are willing to share their lessons may only teach certain content areas. Another limitation of this project is a need for continuous professional development throughout the school year. This project is a 3-day series, but teachers require more sustained training to fully comprehend how to effectively integrate the iPad within their instruction. Although a schedule for ongoing professional development throughout the school year was created, I do not have the authority or capacity to enforce that training.

Recommendations for Alternative Approaches

An alternative approach to address this problem differently could be to use all 3 schools in the district that are implementing iPads one-to-one to provide a broader view of teachers' and instructional technology facilitators' perceptions of the professional development presented by the district. Initially, this elementary school was the only one implementing iPads, but now there are two more schools within the district. Perhaps

teachers from all three schools could be asked to present model lessons as professional development providing an opportunity to observe varying perspectives and teachers outside of the current environment.

Another approach to address the problem could be to provide specific Apple certified training for the instructional technology facilitator. The instructional technology facilitator provides the training teachers receive to use the iPad in their instruction. This certified training from Apple involves learning how to gather the appropriate information on participants' technology skills to inform a better professional development plan.

The administrators of the district and schools with iPads could organize more training opportunities for teachers who use iPads in their classrooms. New teachers could benefit from fundamental training that introduces them to basic understandings of using the iPad. Experienced teachers could benefit from more advanced sessions introducing them to new ways of using the iPad to enhance instruction.

Scholarship, Project Development, and Leadership and Change

This section is a personal reflection on my growth throughout the process of project development. I begin with a reflection on what was learned about the processes of scholarship, project development, and leadership and change then conclude with an analysis of my personal growth as a scholar, practitioner, and project developer.

Scholarship

Throughout this study, I grew as a researcher and practitioner. The knowledge I have acquired throughout this study has made me a better writer and researcher. A challenge for me has been scholarly writing. While I believe I have made significant

gains, I know that I will continuously improve my knowledge of organizing and elaborating on my ideas. In my various professional roles, I was always the source of advice for other teachers and students. It has been awkward to be the recipient of advice. As a result, I have learned that collegiality is important for personal growth. I have learned to accept the suggestions of colleagues and my committee.

Current research is vital to enhance my scholarship and critical thinking skills. I am more informed on how to find and analyze current research to address the needs of educators. Through the process of reading scholarly work, I am more aware of the quality of work I must present as a scholar researcher and practitioner.

As a practitioner, I will also use the knowledge gained from this experience to discover other local problems to address. Having an understanding of scholarly research, and methodology will enable me to possibly create social change in many schools across my district. Progressing through this entire process of project creation has encouraged me to discover other ways to promote effective professional development for all teachers. I have created a public online resource for teachers with links and ideas for integrating technology including the iPad. It is my hope that through my leadership I will encourage more teachers to be confident in their abilities and take a risk to discover or create new ways of integrating technology within their instruction.

Project Development

Developing the project was an exciting yet challenging endeavor. I began with a plan in mind, but constantly changed my outline to ensure a concise and quality product. I evaluated each aspect of the project for value and effect. It was important that teachers

understood the value of what they were learning and the effect the collaboration and lesson creation would have on their instruction. Creating a project with breadth and depth is a tedious process that involves much thought and consideration. I constantly evaluated the information to be presented and made the necessary adjustments so that every detail was considered. Another important aspect of the project creation was the evaluations for each day of the professional development training. I wanted to ensure I received relevant feedback from the teacher participants to make improvements for the following days of training. The process of project creation required effort, however, this effort was necessary to ensure success when the project is implemented.

Leadership and Change

Leadership can have many different meanings to different individuals. It can be someone guiding the way or helping others to move forward. Leadership can also be setting a vision of creative inspiration for others to follow. I believe leadership can be both guidance and vision in an atmosphere of positive change. After working on this project, I have learned that I have a strong commitment to complete my work. I have encountered many obstacles throughout this process, yet continued to have perseverance to finish. Consequently, I have increased my confidence as a leader and agent of change. I am inspired to encourage more change for teachers receiving professional development in all settings. I may not have the capacity or authority to enforce the change at the focus school, but I do have the capacity to initiate that change by sharing this project with the administration and instructional technology facilitator.

Self as Scholar

Throughout this process of creating the project, I realized how much I had grown as a scholar. I found that much patience was necessary to read through the research and decipher the meaning. I also discovered that research, although peer-reviewed, must still be scrutinized for bias and ethics. Everything I read must be questioned and analyzed. This experience has afforded me with a new perspective for my competence as a researcher. I acknowledge there is much to be learned as I continue to practice the new skills I have acquired, but do feel confident in my abilities as a new scholar in the field of education.

Self as Practitioner

By creating this project, I have become more aware of the need to explore ways in which I can help to improve issues in local schools. I can use the knowledge gained from developing the project to examine those issues and create a possible solution. While reading through the literature for the literature review, I found studies that could be conducted with the pre-service teachers in my technology class. As an experienced practitioner, I can, with confidence, conduct a study and implement changes based on the findings.

Self as Project Developer

As a project developer, I am confident in my performance of locating and organizing necessary research and information. I used information from the literature on tpack professional development and best practices for professional development training to inform the content of the project. Through the iterative process of creating the project,

I learned about appropriate alignment of all parts of the project, which was new to me. In the past when developing training for students or other teachers, I set goals, but not objectives or outcomes. I learned that goals, objectives, and outcomes are necessary to ensure alignment of the project. As the project developer it is necessary to understand if participants gained the knowledge intended. Therefore, I learned that a daily formative feedback assessment was necessary to discover the effectiveness of the training. I am passionate about helping teachers improve their knowledge of iPad use; therefore, I will continue to improve my skills for project development to become more proficient at creating effective training for teachers.

Reflection on the Importance of the Work

Teachers are responsible for molding the young, diverse minds of our future. It is with integrity that teachers take on that challenge of developing the minds of tomorrow. I believe the work I completed for this study is very important for helping teachers in this 21st century environment. My project will enable teachers of all skill levels to integrate the technology of the iPad in their instruction. It will also encourage them to seek new and better ways of integrating the iPad as well as other technologies. I have learned that it is important for teachers to receive high-quality professional development to remain current with research-based best practices. I have also learned the importance of conducting research to find potential solutions to educational issues prompting positive change for students. Increased research in schools can lead to more informed professional development for teachers thus increased performance. This increased performance of teachers may lead to greater academic achievement for students.

Implications, Applications, and Directions for Future Research

The intention of this project was to meet the needs of teachers implementing iPads in their instruction. By sharing this project plan with the administration and instructional technology facilitator, possible action may be considered for improving the professional development of teachers implementing iPads. The implications of this study could lead to future research involving more grade levels, teachers, and possibly students since this study was conducted with fourth and fifth grade teachers using iPads at one elementary school. There is much to be learned about iPads in education and limited research in this area. Future research could include more schools and possibly other grade levels such as middle and high schools. Future research could also focus on student achievement in schools where each student and teacher are provided an iPad and there is ongoing professional development and support for teachers who use iPads to enhance instruction. Specifically, a quantitative study could be conducted to discover the effectiveness of teacher and student use of iPads on student achievement.

Conclusion

At the conclusion of this study, it was determined that teachers desire more collaboration with colleagues to create content-specific, integrated iPad lessons. Teachers also need ongoing professional development throughout the school year aimed at providing training to integrate the iPad to enhance instruction. Teachers are tasked with the job of staying abreast of the best ways to integrate technology such as the iPad; therefore it is vital that they receive relevant professional development to support their use. Teachers do not intuitively know how to effectively integrate new technology such

as the iPad, they must be taught in a strategic and sustained manner. Based on these results, I created a 3-day professional development series for teachers to collaborate, create, and share iPad integrated lessons. The goals of this project were to provide teachers with training, modeled lessons, collaboration time, an online shared resource, and a schedule for ongoing professional development. This project will provide teachers with the initial training and time for collaboration and lesson creation. It will provide stakeholders with the information necessary to make informed decisions about the ongoing training needs of teachers integrating the iPad in instruction. If teachers are provided with more targeted training that is ongoing throughout the school year, it is likely that will have an effect on their students' learning. This study has provided me with the insight and growth of a scholar practitioner. It is my hope that this study will impact current research on professional development needs for use of the iPad to enhance instruction.

References

Adams, S. R., Mix, E. K. (2014). Taking the lead in faculty development: teacher educators changing the culture of university faculty development through collaboration. *AILACTE Journal, 11*(1), 37-56. Retrieved from ERIC.

Allan, W., Erickson, J., Brookhouse, P., & Johnson, J. (2010). Teacher professional development through a collaborative curriculum project – an example of TPACK in Maine. *TechTrends, 54*(6), 36-43. doi:10.1007/s11528-010-0452-x

Ally, M., Grimus, M., & Ebner, M. (2014). Preparing teachers for a mobile world to improve access to education. *Prospects: Quarterly Review of Comparative Education, 44*(1), 43-59. doi:10.1007/s11125-014-9293-2

Alsofyani, M., Aris, B., & Eynon, R. (2013). A preliminary evaluation of short online training workshop for TPACK development. *International Journal of Teaching and Learning in Higher Education, 25*(1), 118-128. Retrieved from ERIC.

An, Y., & Reigeluth, C. (2011). Creating technology-enhanced, learner-centered classrooms: K-12 teachers' beliefs, perceptions, barriers, and support needs. *Journal of Digital Learning in Teacher Education, 28*(2), 54-62. doi:10.1080/21532974.2011.10784681

Apple in Education. (2010). *Apple in education profiles.* Retrieved from https://www.apple.com/education/real-stories/

Apple in Education. (2014). *Apple professional development catalog.* Retrieved from https://www.apple.com/education/docs/apd_catalog_april_2014.pdf

Attard, C. (2013). Thanks for the iPads, but what do we do with them? Integrating iPads

into the teaching and learning of primary mathematics. *Curriculum Leadership – An electronic journal for leaders in education, 11*(1). Retrieved from http://www.curriculum.edu.au/leader/

Beglau, M., Craig-Hare, J., Foltos, L., Gann, K., James, J., Jobe, H., Knight, J., & Smith, B. (2011). *Technology, coaching, and community: Power partners for improved professional development in primary and secondary education.* An ISTE White Paper, Special Conference Release. Retrieved from http://www.iste.org/learn/coaching-white-paper.aspx

Bingimlas, K. (2009). Barriers to the successful integration of ICT in teaching and learning environments: A review of the literature. *Eurasia Journal of Mathematics, Science, & Technology Education, 5*(3), 235-245. Retrieved from http://www.ejmste.com/

Board of Trustees. (2012, December 1). Meeting of the Board of Trustees: Instructional strategies powered by technology. Retrieved from http://www.boarddocs.com/sc/greenville/Board.nsf/Public

Borg, N., & O'Hara, J. (2008). Edmodo [Mobile application software]. Retrieved from https://www.edmodo.com/?language=en

Carrejo, D. J., & Reinhartz, J. (2012). Exploring the synergy between science literacy and language literacy with English language learners: lessons learned within a sustained professional development program. *SRATE Journal, 21*(2), 33-38. Retrieved from ERIC.

Chai, C., Koh, J., & Tsai, C. (2013). A review of technological pedagogical content

knowledge. *Educational Technology & Society, 16*(2), 31-51. Retrieved from ERIC.

Chou, C., Block, L., & Jesness, R. (2012). A case study of mobile learning pilot project in K-12 schools. *Journal of Educational Technology Development and Exchange, 5*(2), 11-26. Retrieved from ERIC.

Cifuentes, L., Maxwell, G., & Bulu, S. (2011). Technology integration through professional learning community. *Journal of Educational Computing Research, 44*(1), 59-82. Retrieved from http://www.jrnledcompresearch.com

Cochrane, T., Narayan, V., & Oldfield, J. (2011). iPadagogy: Appropriating the iPad within pedagogical contexts. *International Journal of Mobile Learning and Organisation, 7*(1), 48-65. doi:10.1504/IJMLO.2013.051573

Coffman, T. (2009). Getting to the heart of technology integration: Virginia's instructional technology resources teacher program. *Learning & Leading with Technology, 36*(7), 20-23. Retrieved from http://www.learningandleading-digital.com/learningandleading

Collins, A., & Halverson, R. (2010). The second educational revolution: rethinking education in the age of technology. *Journal of Computer Assisted Learning, 26*, 18-27. doi:10.1111/j.1365-2729.2009.00339.x

Common Core State Standards Initiative (CCSS). (2012). Retrieved January 7, 2013, from http://www.corestandards.org/assets/CCSSI_ELA%20Standards.pdf

Creswell, J. (2012). *Educational research: Planning, conducting, and evaluating and quantitative and qualitative research (4th ed.).* Boston, MA: Pearson Education,

Inc.

Crichton, S., Pegler, K., & White, D. (2012). Personal devices in public settings: Lessons learned from an iPod touch/iPad project. *The Electronic Journal of e-Learning, 10*(1), 23-31. Retrieved from ERIC.

Darling-Hammond, L., & Richardson, N. (2009). Teacher learning: What matters? *Educational Leadership, 66*(5), 46-53. Retreived from ERIC.

Dawson, K. (2012). Using action research projects to examine teacher technology integration practices. *Journal of Digital Learning in Teacher Education, 28*(3), 117-124. doi:10.1080/21532974.2012.10784689

Debele, M., & Plevyak, L. (2012). Conditions for successful use of technology in social studies classrooms. *Computers in Schools, 29*, 285-299. doi:10.1080/07380569.2012.703602

Dettelis, P. (2011). New York state technology education: History, the current state of affairs, and the future. *Technology and Engineering Teacher, 70*(4), 34-38. Retrieved from ERIC.

Dudeney, G., Hockly, N., & Pegrum, M. (2013). *Digital literacies.* Harlow: Pearson

Ertmer, P., & Ottenbreit-Leftwich, A. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. *Journal of Research on Technology in Education, 42*(3), 255-284. doi:10.1080/15391523.2010.10782551

Ertmer, P., Ottenbreit-Leftwich, A., Sadik, O., Sendurur, E., & Sendurur, P. (2012). Teacher beliefs and technology integration practices: A critical relationship. *Computers & Education, 59*(2), 423-435. doi:10.1016/j.compedu.2012.02.001

Ferriter, W. (2011). Good teaching trumps good tools. *Educational Leadership, 68*(5), 84-85. Retrieved from http://www.ascd.org/publications/educational-leadership.aspx.

Figg, C., & Jaipal, K. (2013). Transforming classroom practice: Technology professional development that works. *Teaching and Learning 8*(1), 87-98. Retrieved from ERIC.

Fisher, D., Frey, N., & Nelson, J. (2012). Literacy achievement through sustained professional development. *The Reading Teacher, 65*(8), 551-563. doi:10.1002/TRTR01082

Foltos, L. (2015). Principals boost coaching's impact: school leaders' support is critical to collaboration. *Journal of Staff Development, 36*(1), 48-51. Retrieved from ERIC.

Foster, E. J. (2010). Creating geographers: Evaluating teacher participation in a geography-based summer academy. *The Social Studies, 101*, 216-224. doi:10.1080/00377990903583752

Gerard, L., Varma, K., Corliss, S. B., & Linn, M. C. (2011). Professional development for technology-enhanced inquiry science. *Review of Educational Research, 81*(3), 408-448. doi:10.3102/0034654311415121.

Giles, R., & Shaw, E. (2011). SMART boards rock. *Science and Children, 49*(4), 36-37. Retrieved from ERIC.

Glassett, K., & Schrum, L. (2009). Teacher beliefs and student achievement in technology-rich classroom environments. *International Journal of Technology in*

Teaching & Learning, 5(2), 138-153. Retrieved from ERIC.

Graham, C., Burgoyne, N., Cantrell, P., Smith, L., St. Clair, L., & Harris, R. (2009). TPACK development in science teaching: Measuring the TPACK confidence of inservice science teachers. *TechTrends 53*(5), 70-79. doi:10.1007/s11528-009-0328-0

Guzman, A., & Nussbaum, M. (2009). Teaching competencies for technology integration in the classroom. *Journal of Computer Assisted Learning, 25*(5), 453-469. doi:10.1111/j.1365-2729.2009.00322.x

Hammond, T. C., & Manfra, M. M. (2009). Giving, prompting, making: Aligning technology and pedagogy within TPACK for social studies instruction. *Contemporary Issues in Technology and Teacher Education, 9*(2), 160-185. Retrieved from ERIC.

Hancock, D., & Algozzine, B. (2011). *Doing case study research: A practical guide for beginning researchers.* New York, NY: Teachers College Press.

Harris, J., & Hofer, M. (2011). Technological Pedagogical Content Knowledge (TPACK) in action: A descriptive study of secondary teachers' curriculum-based, technology-related instructional planning. *Journal of Research on Technology in Education, 43*(3), 211-229. doi:10.1080/15391523.2011.10782570

Harris, J., Mishra, P., & Koehler, M. (2009). Teachers' technological pedagogical content knowledge and learning activity types: Curriculum-based technology integration reframed. *Journal of Research on Technology in Education, 41*(4), 393-416. doi:10.1080/15391523.2009.10782536

Henderson, S., & Yeow, J. (2012). iPad in education: A case study of iPad adoption and use in a primary school. Paper presented at the System Science (HICSS), 2012 45th Hawaii International Conference. doi:10.1109/HICSS.2012.390

Hicks, S. (2011). Technology in today's classroom: Are you a tech-savvy teacher? *Clearning House: A Journal of Educational Strategies, 84*(5), 188-191. doi:10.1080/00098655.2011.557406

Hixon, E., & Buckenmeyer, J. (2009). Revisiting technology integration in schools: Implication for professional development. *Computers in Schools, 26*, 130-146. doi:10.1080/07380560902906070

Hofer, M., & Grandgenett, N. (2012). TPACK development in teacher education: A longitudinal study of preservice teachers in a secondary M.A. Ed. Program. *Journal of Research on Technology in Education 45*(1), 83-106. doi:10.1080/15391523.2012.10782598

Hofer, M., & Swan, K. M. (2009). Technological pedagogical content knowledge in action: A case study of a middle school digital documentary project. *Journal of Research on Technology, 41*, 179-200. doi:10.1080/15391523.2008/1078528

Hsu, S. (2010). The relationship between teacher's technology integration ability and usage. *Journal of Educational Computing Research, 43*(3), 309-325. Retrieved from ERIC.

Hu, H., Garimella, U. (2014). iPads for STEM teachers: A case study on perceived usefulness, perceived proficiency, intention to adopt, and integration in K-12 instruction. *Journal of Educational Technology, 7*(1), 49-66. Retrieved from

ERIC.

Hutchison, A., Beschorner, B., & Schmidt-Crawford, D. (2012). Exploring the use of the iPad for literacy learning. *The Reading Teacher, 66*(1), 15-23. doi:10.1002/TRTR.01090

Inan, F., & Lowther, D. (2010). Factors affecting technology integration in K-12 classrooms: a path model. *Educational Technology Research Development, 58*(2), 137-154. doi:10.1007/s11423-009-9132-y

Ismail, I., Azizan, S., & Azman, N. (2013). Mobile phone as pedagogical tools: Are teachers ready. *International Educational Studies, 6*(3), 36-47. doi:10.5539/ies.v6n3p36

ISTE (2008). NETS-T Refreshed: National Educational Technology Standards for Teachers (Refreshed). ISTE: Eugene, OR: International Society for Technology in Education. Retrieved from http://www.iste.org/standards/nets-for-teachers.aspx

Jao, L., & McDougall, D. (2015). The collaborative teacher inquiry project: A purposeful professional development initiative. *Canadian Journal of Education, 38*(1), 1-22. Retrieved from ERIC.

Kenny, R., & McDaniel, R. (2011). The role teachers' expectations and value assessments of video games play in their adopting and integrating them into their classrooms. *British Journal of Educational Technology, 42*(2), 197-213. doi:10.1111/j.1467-8535.2009.01007.x

Koehler, M., Mishra, P., Kereluik, K., Shin, T., & Graham, C. (2014). The technological pedagogical content knowledge framework. In J.M. Specter, M.D. Merrill, J.

Elen, & M.J. Bishop (Eds.), *Handbook of research on educational communications and technology* (pp. 101-111). New York, NY: Springer. doi:10.1007/978-1-4614-3185-5_9

Kopcha, T. (2012). Teachers' perceptions of the barriers to technology integration and practices with technology under situated professional development. *Computers & Education, 59*, 1109-1121. doi:10.1016/j.compedu.2012.05.014

Korenman, T., Korenman, M., & Danilina, E. (2009). Global pollution needs a local solution: Russian and American middle school students participate in a video-conference. *Social Science Research and Practice, 4*, 128-138. Retrieved from ERIC.

Lodico, M. G., Spaulding, D. T., & Voegtle, K. V. (2010). *Methods in educational research from theory to practice.* San Francisco, CA: Jossey-Bass.

Lumpe, A., Czerniak, C., Haney, J., & Beltyukova, S. (2012). Beliefs about teaching science: The relationship between elementary teachers' participation in professional development and student achievement. *International Journal of Science Education*, *34*(2), 153-166. doi:10.1080/09500693.551222

Lynch, J., & Redpath, T. (2012). 'Smart' technologies in early years literacy education: A meta-narrative of paradigmatic tensions in iPad use in an Australian preparatory classroom. *Journal of Early Childhood Literacy, 0*(0), 1-28. doi:10.1177/1468798412453150.

Marmarelli, T., & Ringle, M. (2010). The Reed College Kindle Study. Retrieved from http://www.reed.edu/cis/about/kindle_pilot/Reed_Kindle_report.pdf

Martin, W., Strother, S., Beglau, M., Bates, L., Reitzes, T., & Culp, K. (2010). Connecting instructional technology professional development to teacher and student outcomes. *Journal of Research on Technology in Education, 43*(1), 53-74. doi:10.1080/15391523.2010.10782561

Matherson, L., Wilson, E., & Wright, V. (2014). Need TPACK? Embrace sustained professional development. *Delta Kappa Gamma Bulletin, 81*(1), 45-52. Retrieved from ERIC.

Mayotte, G. Wei, D., Lamphier, S., & Doyle, T. (2013). Enhancing capacity to improve student learning. *Catholic Education: A Journal of Inquiry and Practice, 16*(2), 264-287. Retrieved from ERIC.

McCollum, S. (2011). Getting past the 'digital divide'. *Education Digest, 77*(2), 52-55. Retrieved from ERIC.

McKenna, C. (2012). There's an app for that: How two elementary classrooms used iPads to enhance student learning and achievement. *Education, 2*(5), 136-142. doi:10.5935/j.edu.20120205.05

Means, B. (2010). Technology and education change: Focus on student learning. *Journal of Research on Technology in Education, 42*(3), 285-307. doi:10.1080/15391523.2010.10782552

Melhuish, K., & Falloon, G. (2010). Looking to the future: M-learning with the iPad. *Computers in New Zealand Schools: Learning, Leading, Technology, 22*(3), 1-16. Retrieved from ERIC.

Merriam, S. (1998). Qualitative data analysis: An expanded sourcebook (2nd ed.).

Thousand Oaks, CA: Sage.

Merriam, S. (2009). *Qualitative research; A guide to design and implementation.* San Francisco, CA: Jossey-Bass.

Miranda, H., & Russell, M. (2012). Understanding factors associated with teacher-directed student use of technology in elementary classrooms: A structural equation modeling approach. *British Journal of Educational Technology, 43*(4), 652-666. doi:10.1111/j.1467-8535.2011.01228.x

Mishra, P., & Koehler, M.J. (2006). Technological pedagogical content knowledge: A framework for integrating technology in teachers' knowledge. *Teachers College Record, 108*(6), 1017-1054. doi:10.1111/j.1467-9620.2006.00684.x.

Mishra, P., Koehler, M.J., & Kereluik, K. (2009). The song remains the same: looking back to the future of educational technology. *TechTrends, 53*(5), 48-53. doi:10.1007/s11528-009-0325-3

Morsink, P., Hagerman, M., Heintz, A., Boyer, M., Harris, R., Kereluik, K., … Siegler, T. (2011). Professional development to support TPACK technology integration: The initial learning trajectories of thirteen fifth and sixth grade educators. *Journal of Education 191*(2), 3-16. Retrieved from ERIC.

Mueller, I., Wood, E., Willoughby, T., Ross, C., & Specht, J. (2008). Identifying discriminating variables between teachers who fully integrate computers and teachers with limited integration. *Computers and Education, 51,* 1523-1537. DOI: 10.1016/j.compedu.2008.02.003

Murray, O. & Olcese, N. (2011). Teaching and learning with iPads, ready or not?

TechTrends, 55(6), 42-48. doi:10.1007/s11528-011-0540-6

Musanti, S., & Pence, L. (2010). Collaboration and teacher development: unpacking resistance, constructing knowledge, and navigating identities. *Teacher Education Quarterly, 37*(1), 73-89. Retrieved from ERIC.

Northrop, L., & Killeen, E. (2013). A framework for using iPads to build early literacy skills. *The Reading Teacher, 66*(7), 531-537. doi:10.1002/TRTR.1155

Onguko, B. (2014). JiFUNzeni: A blended learning approach for sustainable teachers' professional development. *Electronic Journal of e-Learning, 12*(1), 77-88. Retrieved from ERIC.

Ottenbreit-Leftwich, A., Glazewski, K., Newby, T., & Ertmer, P. (2010). Teacher value beliefs associated with using technology: Addressing professional and student needs. *Computers & Education, 55*(3), 1321-1335. doi:10.1016/j.compedu.2010.06.002

Parnell, W. (2011). Teacher collaboration experiences: Finding the extraordinary in everyday moments. *Early Childhood Research & Practice, 13*(2), 1-11. Retrieved from ERIC.

Parr, J., & Ward, L. (2011). The teacher's laptop as a hub for learning in the classroom. *Journal of Research on Technology in Education, 44*(1), 53-73. doi:10.1080/15391523.2011.10782579

Partnership for 21st century skills. (2011). Retrieved from http://www.p21.org/index.php

Patrick, F., Elliot, D., Hulme, M., & McPhee, A. (2010). The importance of collegiality and reciprocal learning in the professional development of beginning teachers.

Journal of Education for Teaching: International Research and Pedagogy, 36, 277-289. doi:10.1080/02607476.2010.197373

Pegrum, M., Oakley, G., & Faulkner, R. (2013). Schools going mobile: A study of the adoption of mobile handheld technologies in western Australian independent schools. *Australasian Journal of Educational Technology, 29*(1), 66-81. Retrieved from ERIC.

Perrotta, C. (2013). Do school-level factors influence the educational benefits of digital technology? A critical analysis of teachers' perceptions. *British Journal of Educational Technology, 44*(2), 314-327. doi:10.1111/j.1467-8535.2012.01304.x

Polly, D. (2011). Examining teachers' enactment of technological pedagogical and content knowledge (TPACK) in their mathematics teaching after technology integration professional development. *Journal of Computers in Mathematics and Science Teaching, 20*(1), 37-59. Retrieved from ERIC.

Polly, D., Neale, H., & Pugalee, D. K. (2014). How does ongoing task-focused mathematics professional development influence elementary school teachers' knowledge, beliefs and enacted pedagogies? *Early Childhood Education, 42*(1), 1-10. doi:10.1007/s10643-013-0585-6.

Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon, 9*(5), 1-6. doi:10.1108/10748120110424816

Prensky, M. (2008). The role of technology in teaching and the classroom. *Educational Technology, 48*(6), 1-3. Retrieved from ERIC.

Picker, L.S. (2012). The ongoing need for professional learning. *Journal of Jewish*

Education, 78, 313-315. doi:10.1080/15244113.2012.732771

Puentedura, R. (2011, October 28). SAMR and TPCK in action. [Web log comment]. Retrieved from http://www.hippasus.com/rrpweblog/archives/2011/10/28/SAMR_TPCK_In_Action.pdf

Quillen, I. (June 15, 2011). Educators evaluate learning benefits of iPads. Education Week: Digital Directions. Retrieved from http://www.edweek.org/dd/articles/2011/06/15/03mobile.ho4.html

Reed-Swale, T. (2009). Engaging digital natives in a digital world. *Connect Magazine, 22*(3), 22-25. Retrieved from ERIC.

Roberts, W., & Streeter, C. (2014). Educreations [Mobile application software]. Retrieved from http://www.educreations.com

Roehrig, G. H., Dubosarsky, M., Mason, A., Carlson, S., & Murphy, B. (2011). We look more, listen more, notice more: Impact of sustained professional development on head start teachers' inquiry-based and culturally-relevant science teaching practices. *Journal of Science Education and Technology*, *20*(5), 566-578. doi:10.1007/s10956-011-9295-2

Ronayne, K. (2013, June 9). iPads offer new teaching, learning tools for Concord's elementary schools. *Concord Monitor,* http://www.concordmonitor.com/photos/6768072-95/ipads-offer-new-teaching-learning-tools-for-concords-elementary-schools

Saldana, J. (2009). *The coding manual for qualitative researchers.* Thousand Oaks,

California: Sage.

Sangani, K. (2013). BYOD to the classroom [bring your own device]. *Engineering & Technology, 8*(3), 42-45. doi:10.1049/et.2013.0304

Schuck, S., Aubusson, P., Kearney, M., & Burden, K. (2012). Mobilising teacher education: a study of professional learning community. Teacher Development: An international journal of teachers' professional development, 17(1), 1-18. doi:10.1080/13664530.2012.752671

Shapley, K., Sheehan, D., Maloney, C., & Caranikas-Walker, F. (2010). Evaluating the implementation fidelity of technology immersion and its relationship with student achievement. *The Journal of Technology, Learning, and Assessment, 9*(4), 5-68. Retrieved from ERIC.

Shulman, L. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher, 15*(2), 4-14. doi:10.3102/0013189X015002004

Siegle, D. (2013). iPads: Intuitive technology for 21st-century students. *Gifted Child Today, 36*(2), 146-150. doi:10.1177/1076217512474983

Smith, P., & Owens Jr., E. (2010). Examining barriers to integrate technology in elementary teacher education programs. *Journal of Technology Integration in the Classroom, 2*(1), 57-74. Retrieved from ERIC.

Smolin, L., & Lawless, K. (2011). Evaluation across contexts: Evaluating the impact of technology integration professional development partnerships. *Journal of Digital Learning in Teacher Education, 27*(3), 92-98. doi:10.1080/21532974.2011.10784663

Smylie, M. (2014). Teacher evaluation and the problem of professional development. *Mid-Western Educational Researcher, 26*(2), 97-111. Retrieved from ERIC.

Stover, S., & Veres, M. (2013). TPACK in higher education: Using the TPACK framework for professional development. *Global Education Journal, 2013*(1), 93-110. Retrieved from ERIC.

Sugar, W., & Slagter van Tryon, P. (2014). Development of a virtual technology coach to support technology integration for k-12 educators. *TechTrends, 58*(3), 54-62. doi:10.1007/s11528-014-0752-7

Tournaki, E., Lyublinkskaya, I., & Carolan, B. (2011). An ongoing professional development program and its impact on teacher effectiveness. *The Teacher Educator, 46*, 299-315. doi:10.1080/08878730.2011.604711

Twining, P., Raffaghelli, J., Albion, P., & Knezek, D. (2013). Moving education into the digital age: the contribution of teachers' professional development. *Journal of Computer Assisted Learning, 29*(5), 426-437. doi:10.1111/jcal.12031

United States Department of Education. (2007). NCLB and Other Elementary/Secondary Policy Documents. Retrieved from http://www.ed.gov/policy/elsec/guid/states/index.html#aa

United States Department of Education. (2010). National Educational Technology Trends Study State Strategies Report: Vol.1. Retrieved from www.2.gov.rschstat/eval/tech/netts/netts-vol1-exec-sum.html

Varma, K., Husic, F., & Linn, M. (2008). Targeted support for using technology-enhanced science inquiry modules. *Journal of Science Education and Technology,*

17(4), 341-356. doi:10.1007/s10956-008-9104-8

Warschauer, M., Arada, K., & Zheng, B. (2010). Laptops and inspired writing. *Journal of Adolescent & Adult Literacy, 54*(3), 221-223. doi:10.1598/JAAL.54.3.8

Waters, J. (2010). Enter the iPad (or not?). *The Journal, 37*(6), 38-45. Retrieved from ERIC.

Walters, E. (2011). Will the iPad revolutionize education? *Learning & Leading with Technology, 38*(7), 6-8. Retrieved from ERIC.

Wang, J., Odell, S., & Schwille, S. (2008). Effects of teacher induction on beginning teachers' teaching: A critical review of the literature. *Journal of Teacher Education, 59*(2), 132-152. doi:10.1177/0022487107314002

Wayne, A., Yoon, K., Zhu, P., Cronen, S., & Garet, M. (2008). Experimenting with teacher professional development: Motives and methods. *Educational Researcher, 37*(8), 469-479. doi:10.3102/0013189X08327154

Wikan, G., & Molster, T. (2011). Norwegian secondary school teachers and digital technology. *European Journal of Teacher Education, 34*(2), 209-218. doi:10.1080/02619768.2010.543671

Wilson, E., & Demetriou, H. (2007). New teacher learning: Substantive knowledge and contextual factors. *The Curriculum Journal, 18*(3), 213-229. doi:10.1080/09585170701589710

Wright, V. (2010). Professional development and the master technology teacher: the evolution of one partnership. *Education, 131*(1), 139-146. Retrieved from ERIC.

Yin, R. K. (2011). *Qualitative research from start to finish.* New York, NY: The Guilford

Press.

Yin, R. K. (2013). *Case study research: Design and methods (5th ed.)*. Thousand Oaks, CA: Sage.

Young, J., Young, J., & Shaker, Z. (2012). Technological Pedagogical Content Knowledge (TPACK) literature using confidence intervals. *TechTrends, 56*(5), 25-33. doi:10.1007/s11528-012-0600-6

Appendix A: Professional Development Plan for the Use of iPads to Enhance Instruction

Introduction

The problem this study addressed was the need for more content-specific training for teachers who were expected to use the iPad in their instruction. The purpose was to explore the descriptions of 10 teachers' and 1 instructional technology facilitator regarding the district's iPad professional development, and the implementation of the iPad in instruction. This project site is an elementary school serving kindergarten through fifth grade students, which opened three years ago. The fourth and fifth grade teachers and students were each given an iPad. The district provided initial professional development training for the basic use and set up of the iPad for teachers before school started the first year. The initial training incorporated collaboration and hands-on lesson creation. Teachers found this training to be beneficial, but there were no follow-up trainings as intense or thorough as the initial. Through interviews with teachers, the instructional technology facilitator, and lesson plan analysis, it was revealed that teachers desired more opportunities for collaboration with colleagues to create content-specific iPad integrated lessons, and professional development that is continuous throughout the school year. Therefore, this project was created to provide teachers with model lessons created and shared by teachers who were willing, time for collaboration with colleagues to create iPad integrated, content specific lessons, and time to share and learn from colleagues in other grade levels. A schedule for ongoing professional development throughout the school year was also created. This professional development project was intended to benefit the fourth and fifth grade teachers at the project site, but could also be

beneficial for teachers in other grade levels, and other schools who are using iPads with students.

Professional Development Goals, Outcomes, and Objectives

Program Goals

1. Provide training to educate teachers on the foundations of the use of iPads to enhance instruction in specific content areas.
2. Provide teacher-created and teacher-modeled lessons in each of three content areas.
3. Provide teachers with the opportunity to collaborate with peers while developing lessons that can be incorporated within their classroom and content area.
4. Develop an online resource through Google Drive with teacher-created lessons readily available for use or modification.
5. Provide a schedule for ongoing professional development throughout the school year.

Program Outcomes

1. Teachers will be able to demonstrate the foundations of using iPads in the classroom to enhance instruction.
2. Teachers will be able to demonstrate the skills necessary to implement the use of iPads to enhance instruction in specific content areas.
3. Teachers will collaborate with peers to develop lesson plans for using iPads in specific content areas in their classroom.

4. Teachers will have access to an online resource of content aligned, iPad-integrated lessons for implementation within their classroom.
5. Administrators and the instructional technology facilitators will have a schedule to follow for ongoing professional development throughout the school year.

Program Objectives

1. As a result of the introduction to iPad use to enhance instruction in specific content areas, teachers will be able to identify the strategies that make an effective iPad integrated lesson.
2. As a result of modeling from teachers who are already implementing iPad use to enhance instruction in specific content areas within their classrooms, teachers will be able to utilize the strategies learned within their own iPad- integrated lessons.
3. As a result of the time spent with peers, teachers will leave the professional development with 8-10 lessons that can be implemented upon return to the classroom.
4. As a result of the professional development, teachers will have an online resource of iPad integrated, content-specific lessons to immediately implement within their instruction or modify to meet the specific needs of their students.
5. The professional development will provide the administrators and instructional technology facilitator with a schedule for ongoing professional development throughout the school year.

Professional Development Training Schedule

Day One: How do I effectively integrate iPads within content-specific lessons?

Goals

1. Provide training to educate teachers on the foundations of the use of iPads to enhance instruction in specific content areas.
2. Provide teacher-created and teacher-modeled lessons in each of three content areas.

Outcomes

3. Teachers will be able to demonstrate the foundations of using iPads in the classroom to enhance instruction.
4. Teachers will be able to demonstrate the skills necessary to implement the use of iPads to enhance instruction in specific content areas.

Objectives

5. As a result of the introduction to iPad use to enhance instruction in specific content areas, teachers will be able to identify the strategies that make an effective iPad integrated lesson.
6. As a result of modeling from teachers who are already implementing iPad use to enhance instruction in specific content areas within their classrooms, teachers will be able to utilize the strategies learned within their own iPad-integrated lessons.

Day One

8:00-10:15 Participants will gather in the media center. The presentation will begin with an introduction to the effective use of technology to enhance instruction followed by a *video that models the effective use of iPads in instruction.

10:15-10:45 Speaker 1 will share his/her experiences of implementing iPad instruction through a modeled lesson in math.

10:45-11:00 Restroom and snack break.

11:00-11:30 Speaker 2 will share his/her experiences of implementing iPad instruction through a modeled lesson in science.

11:30-12:30 Lunch on your own.

12:30-1:00 Speaker 3 will share his/her experiences of implementing iPad instruction through a modeled lesson in social studies.

1:00-2:00 The speakers will then sit on a panel for a question and answer session with the teachers.

2:00-2:15 Restroom and snack break

2:15-3:00 The presentation will be wrapped up with a survey and an overview of the next session, including any materials teachers will need.

*The video is focused on using Bloom's Taxonomy, standards alignment, teamwork and collaboration, and 21st Century skills when creating iPad lessons. Many apps are discussed, but explicitly explained as a tool to help and should not be the focus of the lesson.

Purpose

The purpose of this professional development is to provide teachers with information on integrating the iPad to enhance instruction, model lessons created and shared by teachers who are integrating the iPad, time for collaboration with colleagues to create iPad integrated, content-specific lessons, and time to share and learn from colleagues in other grade levels.

Goals

- Provide training to educate teachers on the foundations of the use of iPads to enhance instruction in specific content areas.
- Provide teacher-created and teacher-modeled lessons in each of three content areas.
- Provide teachers with the opportunity to collaborate with peers while developing lessons that can be incorporated within their classroom and content area.
- Develop an online resource through Google Drive with teacher-created lessons readily available for use or modification.
- Provide an schedule for ongoing professional development throughout the school year.

Objectives

- As a result of the introduction to iPad use to enhance instruction in specific content areas, teachers will be able to identify the strategies that make an effective iPad integrated lesson.
- As a result of modeling from teachers who are already implementing iPad use to enhance instruction in specific content areas within their classrooms, teachers will be able to utilize the strategies learned within their own iPad integrated lessons.
- As a result of the time spent with peers, teachers will create 8-10 lessons that can be implemented upon return to the classroom.
- As a result of the professional development, teachers will have an online resource of iPad integrated, content-specific lessons to immediately implement within their instruction or modify to meet the specific needs of their students.
- The professional development will provide the administrators and instructional technology facilitator with a schedule for ongoing professional development throughout the school year.

Agenda

This professional development will be presented over 3 full days from 8am-3pm each day. A daily agenda will be provided.

Google Drive

An online resource folder will be provided for teachers to share iPad integrated, content-specific lessons, find and use lessons, or modify for the specific needs of their students.

Day 1 -How do I effectively integrate iPads within content-specific lessons?

- Introduction to the effective use of technology to enhance instruction.
- Video – effective use of iPads in instruction
- Teacher modeling of iPad lessons
- Q & A time
- Survey and reflection

TPACK

- What is TPACK?
- Knowledge components of TPACK
- Using TPACK to integrate the iPad

What is TPACK?

- TPACK – Technological Pedagogical Content Knowledge
- A teacher's proficiency to teach with learned strategies in a specific content area using technology.
- There are seven knowledge components for expertise and effective technology integration in the classroom.

Knowledge Components of TPACK

- CK – Content Knowledge – knowledge of a specific subject area
- PK – Pedagogical Knowledge – knowledge of specific strategies and methods used in teaching or educational practice
- TK – Technological Knowledge – knowledge of technology tools and resources available for educational purposes
- PCK – Pedagogical Content Knowledge – knowledge of strategies to effectively teach a specific subject area
- TCK – Technological Content Knowledge – knowledge of presenting subject specific content with technology
- TPK – Technological Pedagogical Knowledge – knowledge of specific strategies to teach with technology
- TPACK – Technological Pedagogical Content Knowledge – knowledge of strategies to effectively teach specific subject areas using technology

Using TPACK to integrate the iPad

- Teaching with the TPACK Framework does not mean having the knowledge to teach technology *to* students rather it is having the knowledge to teach students *with* technology.
- It is the harmonious overlap of Technology Knowledge (TK), Content Knowledge (CK), and Pedagogy Knowledge (PK) that enables a teacher to plan and develop effective lessons integrating technology into the content area.
- New and emerging technologies are not always the best fit for teaching certain content. The openness and willingness to understand and apply new technologies when appropriate is the flexibility required of teachers to integrate technology effectively into their content areas.

Effective Use of iPads in Instruction

- In this video, you will learn about incorporating Bloom's Taxonomy, properly aligning activities with standards, the benefits of teamwork and collaboration, and 21st Century skills.
- Many apps will be discussed, but only as tools to help, not the focus of the lessons.

Model Lesson in Math

- Speaker 1 will share his/her experiences of implementing iPad instruction through a modeled lesson in math.

Model Lesson in Science

- Speaker 2 will share his/her experiences of implementing iPad instruction through a modeled lesson in science.

Model Lesson in Social Studies

- Speaker 3 will share his/her experiences of implementing iPad instruction through a modeled lesson in social studies.

Questions

- Q & A with Speaker Panel
- Please fill out the survey and provide additional comments/recommendations when the Q & A is complete.

Evaluation of Professional Development

Day 1: Formative Feedback

Participant Name: _____

Grade Level/Content Area: _____

School: _____

This evaluation will provide feedback on the effectiveness of this training. Please take a minute to complete and return to the presenter.

	Very Beneficial 3	Somewhat Beneficial 2	Not Beneficial 1
The content of the training			
The materials presented			
The teacher speakers			
The time for question and answer with teacher speakers			
The overall experience			

Additional comments/recommendations:

Day Two: How do I use collaboration with colleagues to create iPad-integrated content specific lessons?

Goals

1. Provide teachers with the opportunity to collaborate with peers while developing lessons that can be incorporated within their classroom and content area.
2. Develop an online resource through Google Drive with teacher-created lessons readily available for use or modification.

Outcomes

3. Teachers will collaborate with peers to develop lesson plans for using iPads in specific content areas in their classroom.
4. Teachers will have access to an online resource of content aligned, iPad-integrated lessons for implementation within their classroom.

Objectives

5. As a result of the time spent with peers, teachers will leave the professional development with 8-10 lessons that can be implemented upon return to the classroom.
6. As a result of the professional development, teachers will have an online resource of iPad integrated, content-specific lessons to immediately implement within their instruction or modify to meet the specific needs of their students.

Day Two

8:00-9:00 During this time, questions from the previous day's survey will be addressed.

9:00-9:15 Restroom and snack break.

9:15-12:00 Teachers will come back to the media center and sit in grade level groups. Teachers will have this time to begin creating their lessons and collaborating with their colleagues. The presenter will walk around and answer questions as they arise.

12:00-1:00 Lunch on your own.

1:00-1:15 Teachers will walk around the media center looking at different lessons created by other grade levels in different content areas to see if they can adapt any resources to meet their own needs.

1:15-2:45 Teachers will resume working in their groups.

2:45-2:55 Teachers will give administrators copies of the completed lessons to be uploaded to the shared Google Drive folder.

2:55-3:00 Teachers will complete an open-ended evaluation about the lessons created, and suggestions for future professional development offerings.

Day 2 –Time for Collaboration and Lesson Creation

- Q & A
- Collaboration and lesson creation time with grade levels
- Mingle with other grade levels to gain ideas and adapt resources
- Evaluation and reflection

Questions

- What questions do you have about yesterday's training?
- (questions from previous day's survey will be addressed here)

Collaboration and Lesson Creation

- Please sit with your grade level groups and use this time to collaborate with your colleagues to create content specific, iPad integrated lessons.

Observation Walk

- Please walk around and look at lessons created by other grade levels. You may find resources that can be adapted to your grade level.

Evaluation

- Please fill out the evaluation about the lessons you have created, and suggestions for future professional development offerings.

Day 2: Formative Feedback

Participant Name: _____

Grade Level/Content Area: _____

School: _____

This evaluation will provide feedback on the effectiveness of this training. Please take a minute to complete and return to the presenter.

	Very Beneficial 3	Somewhat Beneficial 2	Not Beneficial 1
The question/answer session about previous day's presentation			
The time for peer collaboration			
The time for lesson plan creation			
The time for visiting other grade levels and looking at their lessons			
The overall experience			

Additional comments/recommendations:

Day Three: How do I use collaboration with colleagues to create iPad-integrated content specific lessons?

Goals

1. Provide teachers with the opportunity to collaborate with peers while developing lessons that can be incorporated within their classroom and content area.
2. Develop an online resource through Google Drive with teacher-created lessons readily available for use or modification.

Outcomes

3. Teachers will collaborate with peers to develop lesson plans for using iPads in specific content areas in their classroom.
4. Teachers will have access to an online resource of content aligned, iPad-integrated lessons for implementation within their classroom.

Objectives

5. As a result of the time spent with peers, teachers will leave the professional development with 8-10 lessons that can be implemented upon return to the classroom.
6. As a result of the professional development, teachers will have an online resource of iPad integrated, content-specific lessons to immediately implement within their instruction or modify to meet the specific needs of their students.

Day Three:

8:00-9:00 During this time, questions and comments from the previous day's survey will be addressed.

9:00-9:15 Restroom and snack break.

9:15-12:00 Teachers will come back to the media center and sit in grade level groups. Teachers will have this time to begin creating their lessons and collaborating with their colleagues. The presenter will walk around and answer questions as they arise.

12:00-1:00 Lunch on your own.

1:00-1:15 Teachers will walk around the media center looking at different lessons created by other grade levels in different content areas to see if they can adapt any resources to meet their own needs.

1:15-2:45 Teachers will resume working in their groups.

2:45-2:55 Teachers will give administrators copies of the completed lessons to be uploaded to the shared Google Drive folder.

2:55-3:00 Teachers will complete an open-ended evaluation about the lessons created, and suggestions for future professional development offerings.

Day 3 –Time for Collaboration and Lesson Creation

- Q & A
- Collaboration and lesson creation time with grade levels
- Mingle with other grade levels to gain ideas and adapt resources
- Evaluation and reflection

Questions

- What questions do you have about yesterday's training?
- (questions from previous day's survey will be addressed here)

Collaboration and Lesson Creation

- Please sit with your grade level groups and use this time to collaborate with your colleagues to create content specific, iPad integrated lessons.

Observation Walk

- Please walk around and look at lessons created by other grade levels. You may find resources that can be adapted to your grade level.

Evaluation

- Please fill out the evaluation about the lessons you have created, and suggestions for future professional development offerings.

Day 3: Formative Feedback

Participant Name: _____

Grade Level/Content Area: _____

School: _____

This evaluation will provide feedback on the effectiveness of the lesson creation portion of the professional development training, and suggestions for future training.

1. What were the strengths of the lesson creation portion of this training?

2. What recommendations would you suggest for improvement of the lesson creation portion of this training?

3. What suggestions would you make for future professional development trainings to aid in implementing the iPad to enhance content-specific instruction?

Ongoing Professional Development Schedule

Goals:

1. Expose teachers to actual practice with time for hands-on lesson creation, and collaboration with colleagues.
2. Expose teachers to best practices for iPad use in instruction based on latest research.
3. Evaluate professional development sessions to confirm continued effectiveness.

Month	Content	Presenters
August	Training on specific apps available to teachers related to content. Time for collaboration.	Instructional technology facilitator
September	Training on best practices for iPad use in instruction based on latest research.	Instructional technology facilitator
October	Model 4 iPad-integrated lessons – math, science, social studies, and language arts. Time for collaboration and lesson creation.	Teachers who are willing to share their iPad integrated lessons
November	Model iPad-integrated lessons. Time for collaboration and lesson creation.	Kindergarten and third grade teachers
December	Model 4 iPad-integrated lessons – math, science, social studies, and language arts. Time for collaboration and lesson creation.	Teachers who are willing to share their iPad integrated lessons
January	Model iPad-integrated lessons. Time for collaboration and lesson creation.	First and fourth grade teachers
February	Model 4 iPad-integrated lessons – math, science, social studies, and language arts. Time for collaboration and lesson creation.	Teachers who are willing to share their iPad integrated lessons
March	Model iPad-integrated lessons. Time for collaboration and lesson creation.	Second and fifth grade teachers
April	Model 4 iPad-integrated lessons – math, science, social studies, and language arts. Time for collaboration and lesson creation.	Teachers who are willing to share their iPad integrated lessons
May	Reflection – allow teachers time to reflect on the professional development training provided throughout the year.	Instructional technology facilitator/teachers

Summative Feedback

Participant Name: _____

Grade Level/Content Area: _____

School: _____

Now that you have had some time to implement the lessons created in the professional development training, please take a minute to reflect.

1. What aspects of your lesson worked well?

2. What changes would you make for the next time you teach this lesson?

3. What suggestions do you have for other teachers when implementing this lesson in their classroom?

Appendix B: Invitation for Teachers to Participate

Invitation to Participate in a Research Study Focusing on iPads in Instruction

Dear _____,

I am an Assistant Professor of Education at XXX College. I taught in XXX County Schools for 12 years in the Early Childhood and Elementary grades before I moved to higher education. I am currently a doctoral candidate at Walden University pursuing my dissertation topic on the use of iPads in instruction. The purpose of this qualitative case study is to explore the descriptions of 10 fourth and fifth grade teachers and 1 instructional technology facilitator regarding the district's iPad professional development, and the implementation of the iPad in instruction.

Since your school is utilizing iPads, I would like to use it as the site for my data collection. Volunteers for the study need to be certified teachers who are implementing iPads in their instruction. If you agree to participate, I would ask you to provide a lesson plan, participate in one initial face-to-face interview, and participate in a follow-up interview. The interview would last about 45 minutes and be conducted at a time and date convenient to you. The follow-up interview would last about 30 minutes. Pseudonyms will be used to protect the identities of participants and all data will be kept confidential in my personal possession.

Participation in the study would be voluntary with no compensation. There are no risks that could contribute to negative outcomes for any of the participants. All information will be kept confidential and will only be used for the purposes of this study.

The findings of the study will be provided to participants before any public presentations. Please respond to this request letting me know if you are interested in participating in this study.

Thank you for your time and consideration. I look forward to hearing back from you.

Sincerely,
Daphne Poore

Appendix C: Invitation for Instructional Technology Facilitators to Participate

Invitation to Participate in a Research Study Focusing on iPads in Instruction

Dear _____,

I am an Assistant Professor of Education at XXX College. I taught in XXX County Schools for 12 years in the Early Childhood and Elementary grades before I moved to higher education. I am currently a doctoral candidate at Walden University pursuing my dissertation topic on the use of iPads in instruction. The purpose of this qualitative case study is to explore the descriptions of 10 fourth and fifth grade teachers and 1 instructional technology facilitator regarding the district's iPad professional development, and the implementation of the iPad in instruction.

Since you observe teachers for professional development needs and provide professional development to XXX Elementary School, I would like to invite you to participate in my study. Volunteers for the study need to be certified teachers in the Instructional Technology Facilitator position working with XXX Elementary School. If you agree to participate, I would ask you to participate in one face-to-face interview. The interview would last about 45 minutes and be conducted at a time and date convenient to you. Pseudonyms will be used to protect the identities of participants and all data will be kept confidential in my personal possession.

Participation in the study would be voluntary with no compensation. There are no risks that could contribute to negative outcomes for any of the participants. All information will be kept confidential and will only be used for the purposes of this study.

The findings of the study will be provided to participants before any public presentations. Please respond to this request letting me know if you are interested in participating in this study.

Thank you for your time and consideration. I look forward to hearing back from you.

Sincerely,
Daphne Poore

Appendix D: Informed Consent for Teachers

You are invited to take part in a research study of using iPads in instruction. You are invited to participate in this study because you are an elementary teacher implementing iPads in your instruction. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part.

A researcher named Daphne Poore, who is a doctoral student at Walden University, is conducting this study.

Background Information:
The purpose of this qualitative case study is to explore the descriptions of 10 fourth and fifth grade teachers and 1 instructional technology facilitator regarding the district's iPad professional development, and the implementation of the iPad in instruction.

Procedures:
If you agree to be in this study, you will be asked to:

- Participate in two face-to-face interviews (45-60 minutes and 30-45 minutes)
- Provide a copy of 1 lesson plan where the iPad is being used

Voluntary Nature of the Study:
This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. No one at XXX Elementary School will treat you differently if you decide not to be in the study. If you decide to join the study now, you can still change your mind later. You may stop at any time.

Risks and Benefits of Being in the Study:
There may be minimal risks in participating in this study, as there may be mild discomfort with answering questions pertaining to your teaching practice. However, confidentiality will be maintained at all times. The benefits of this study include the analysis of best practices of professional development for use of the iPad in instruction.

Compensation:
There is no compensation for participation.

Confidentiality:
Any information you provide will be kept confidential. All interviews will be digitally recorded, and downloaded to my password-protected personal computer. All lesson plans will be marked with pseudonyms, and locked in my personal desk drawer. The researcher will not use your information for any purposes outside of this research project. All data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:

You may ask any question you have now. Or if you have questions later, you may contact the researcher via daphne.poore@walden.edu or (864) 423-0272. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 612-312-1210. Walden University's approval number for this study is **10-30-14-0062132** and it expires on **October 29, 2015**.

The researcher will give you a copy of this form to keep.

Statement of Consent:
I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By signing below, I am agreeing to the terms described above.

Printed Name of Participant _____

Date of Consent _____

Participant's Signature _____

Researcher's Signature _____

Appendix E: Informed Consent for Instructional Technology Facilitators

You are invited to take part in a research study of using iPads in instruction. You are invited to participate in this study because you observe teachers using iPads in instruction and provide professional development for them on the use of the iPad in instruction. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part.

A researcher named Daphne Poore, who is a doctoral student at Walden University, is conducting this study.

Background Information:
The purpose of this qualitative case study is to explore the descriptions of 10 fourth and fifth grade teachers and 1 instructional technology facilitator regarding the district's iPad professional development, and the implementation of the iPad in instruction.

Procedures:
If you agree to be in this study, you will be asked to:

- Participate in 1 face-to-face interview (45-60 minutes)

Voluntary Nature of the Study:
This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. No one at XXX County School District or XXX Elementary School will treat you differently if you decide not to be in the study. If you decide to join the study now, you can still change your mind later. You may stop at any time.

Risks and Benefits of Being in the Study:
There are no risks to you in any way. Confidentiality will be maintained at all times. The benefits of this study include the analysis of best practices of professional development for use of the iPad in instruction.

Compensation:
There is no compensation for participation.

Confidentiality:
Any information you provide will be kept confidential. All interviews will be digitally recorded, and downloaded to my password-protected personal computer. The researcher will not use your information for any purposes outside of this research project. All data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:
You may ask any question you have now. Or if you have questions later, you may contact the researcher via daphne.poore@walden.edu or (864) 423-0272. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the

Walden University representative who can discuss this with you. Her phone number is 612-312-1210. Walden University's approval number for this study is **10-30-14-0062132** and it expires on **October 29, 2015**.

The researcher will give you a copy of this form to keep.

Statement of Consent:
I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By signing below, I am agreeing to the terms described above.

Printed Name of Participant _____

Date of Consent _____

Participant's Signature _____

Researcher's Signature _____

Appendix F: NIH Certificate of Completion

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Daphne Poore** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 07/31/2012

Certification Number: 946809

Appendix G: First Teacher Interview Protocol

Interviewer:

Interviewee:

Time and place of interview:

"Thank you for agreeing to meet with me today. I appreciate and value your time. I want to remind you that I will be using a recording device to ensure accuracy. The purpose of this qualitative case study is to explore the descriptions of the fourth and fifth grade teachers and an instructional technology facilitator regarding the district's iPad professional development, and the implementation of the iPad in instruction. This interview should last about 45-60 minutes, and all information will remain confidential"

Research Question #1 – How do fourth and fifth grade teachers describe the district's iPad professional development?

1. Tell me about the district's digital technology professional development program.

   Follow up: Tell me more about the specific types of training you received.

   Probe: Can you give some examples?

2. What professional development did you receive from the district to specifically prepare you for the use of iPads?

   Follow up: Can you elaborate on the usefulness of this training to prepare you for implementing the iPad in your classroom?

   Probe: Can you give me an example?

3. Tell me about the professional development that was most beneficial to you.

   Follow up: Why do you think this specific professional development was most

beneficial?

Probe: Can you give me an example?

4. Talk about the timeline for the professional development you received for implementing the iPad in your classroom.

   Follow up: Can you elaborate on the number of sessions and the amount of time that was spent at each one?

   Probe: Tell me how you feel about the amount of professional development you received during this time.

5. Talk about the timeline you were given for implementing the iPad within your instruction.

   Follow up: Can you tell me more about that process?

   Probe: What challenges, if any, did you encounter because of this timeline?

6. What types of pedagogical strategies were implemented during the professional development you received for the use of the iPads?

   Follow up: Tell me more about (the strategies mentioned).

   Probe: Can you explain how these strategies were helpful to you?

7. Talk about the collaboration opportunities within the training you received for the use of the iPads.

   Follow up: What are some reasons for liking/not liking these collaboration opportunities?

   Probe: What makes you feel that way?

8. How was the professional development focused on specific content areas?

   Follow up: Can you elaborate on this?

   Probe: Can you give me an example?

9. How was the content shaped by the use of the iPad in innovative or interesting ways?

   Follow up: Can you elaborate on this?

   Probe: Can you give me an example?

Research Question #1, Subquestion a – How do teachers describe the iPad best practices that were presented, supported, and developed in the district's professional development?

10. Tell me about the iPad best practices presented by the district's digital technology professional development program.

    Follow up: Can you elaborate on these best practices?

    Probe: Can you give me some examples?

Research Question #3 – How do teachers describe their implementation of the iPad best practices from the district's professional development?

11. Tell me about how you implement the iPad best practices you learned from the district's digital technology professional development program.

    Follow up: Talk about your own personal timeline when implementing iPad best practices.

    Probe: Can you elaborate or give me examples?

Appendix H: Instructional Technology Facilitator Interview Protocol

Interviewer:

Interviewee:

Time and place of interview:

"Thank you for agreeing to meet with me today. I appreciate and value your time. I want to remind you that I will be using a recording device to ensure accuracy. The purpose of this qualitative case study is to explore the descriptions of the fourth and fifth grade teachers and an instructional technology facilitator regarding the district's iPad professional development, and the implementation of the iPad in instruction. This interview should last about 45-60 minutes, and all information will remain confidential."

Research Question #2 – How does the instructional technology facilitator describe the district's iPad professional development?

1. Tell me about the district's digital technology professional development program.

   Follow up: Tell me more about the specific types of training you presented?

   Probe: Can you give some examples?

2. What professional development did you present to specifically prepare teachers for the use of iPads?

   Follow up: Can you elaborate on this?

   Probe: Can you give me an example?

3. Talk about the timeline for the professional development you presented for implementing the iPad.

   Follow up: Can you elaborate on the number of sessions and the amount of time

that was spent at each one?

Probe: Tell me how this timeline was determined.

4. What types of pedagogical strategies did you present for the use of the iPads?

   Follow up: Tell me more about (the strategies mentioned).

   Probe: Can you explain how these strategies were determined to be appropriate for the professional development for the use of iPads in the classroom?

5. Talk about the collaboration opportunities you provided within the training for the use of the iPads.

   Follow up: Can you elaborate on these collaboration opportunities?

   Probe: Tell me about the collaboration you witnessed between the teachers.

6. In what ways was the professional development focused on specific content areas?

   Follow up: Can you elaborate on this?

   Probe: Can you give me examples?

Research Question #2, Subquestion a – How does the instructional technology facilitator describe iPad best practices that were presented, supported, and developed in the district's professional development?

1. What iPad best practices from the district's digital technology professional development program are presented, supported, and developed in the curriculum of the district's digital technology professional development program?

   Follow up: Can you elaborate on these best practices?

   Probe: Can you give some examples?

2. Talk to me about the research base used to develop the best practices presented to teachers.

   Follow up: Can you elaborate on how these best practices are acquired?

   Probe: Tell me more about the criterion for choosing these best practices.

Appendix I: Content Analysis Guide

Research Question #3 – How do teachers describe their implementation of the iPad best practices from the district's professional development?

Standard Lesson Plan Form

Grade Level:

Subject area:

Essential Question:

Applications:

Activating Strategy:

iPad/Technology integration:

Teaching Strategies/Lesson Procedures:

Assessment:

Accommodations:

Lesson Closure:

Descriptive Questions:

1. How is the teacher using the iPad in the lesson?

2. How are the students using the iPad in the lesson?

3. What application(s) is the teacher using?

4. What application(s) are the students using?

5. What pedagogical strategy (ies) is/are the teacher implementing in the lesson?

6. How is the content being shaped by the iPad in an interesting or innovative way?

Appendix J: Second Teacher Interview Protocol

Interviewer:

Interviewee:

Time and place of interview:

"Thank you for meeting with me again. I appreciate and value your time. After looking at your lesson plan, I wanted to ask a few more questions to ensure I interpreted it correctly, and ask you to elaborate. This interview should last about 30-45 minutes, and will be recorded. All information will remain confidential."

1. Tell me about how you were using the iPad in this lesson.

   Follow up: What application(s) were you using?
2. Tell me about how the students were using the iPad in this lesson.

   Follow up: What application(s) were the students using?
3. Tell me about the pedagogical strategies used during this lesson.

   Follow up: Can you elaborate on these strategies?

   Probe: Can you explain further?
4. How were these pedagogical strategies learned and acquired?

   Follow up: Can you elaborate more on this?
5. How would this lesson have been taught differently without the iPad?

   Follow up: Can you elaborate on this conventional way of teaching?

   Probe: Can you provide examples?

6. How do you feel the content is being shaped by the iPad in an interesting or innovative way?

   Follow up: Can you elaborate?

   Probe: Can you provide examples?

Appendix K: Letter of Approval

GREENVILLE COUNTY SCHOOLS
Where enlightening strikes

Department of Accountability and Quality Assurance
Jason B. McCreary, Ph.D., Director
[redacted]

November 20, 2014

Ms. Daphne Poore
[redacted]

SUBJECT: BEST PRACTICES FOR USE OF IPADS IN INSTRUCTION

Dear Ms. Poore:

Greenville County Schools' Research Committee reviewed the research proposal entitled "Best Practices for use of iPads in Instruction." **District approval for this study has been granted.** The approval period for this study is one year from the date of this missive. District approval does not constitute approval for the study to be conducted in any specific school. You must obtain written or verbal permission from the principal Monarch Elementary School before beginning your study. You are reminded that the approved research design and procedures are to be followed. NO change in protocol is allowed without prior written approval from the District.

All interviews conducted as a part of this study must be voluntary. All interviews must be conducted outside of each employee's contract time. No students may be interviewed or observed, nor may any student data be shared with the researcher.

The Director of Accountability and Quality Assurance may withdraw district approval at any time and for any reason. If approval is terminated, all research and accompanying activities involving the district and/or the external agency will cease in Greenville County Schools. Lastly, by conducting research in GCS, you agree to follow all federal regulations for privacy and protection; district research guidelines; and district professional conduct policies. All information, including teacher, school, and district names, will remain confidential and anonymous when publicly reporting. Again, violation of the statement of agreement will be considered a breech of contract.

A final copy of the report is requested by Greenville County Schools.

Sincerely,

Jason B. McCreary, Ph.D.
Director of Research, Evaluation, and Accountability