2020

The Experiences of Elementary Teachers Regarding Technology Integration in the Classroom

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This is to certify that the doctoral study by

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Walden University
2020

Abstract

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MA, Harding University, 2008

BS, University of Arkansas at Pine Bluff, 1990

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

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February 2020

Abstract

At a public elementary school, teachers have been integrating educational technologies in the classroom. The experiences of elementary school teachers regarding technology integration in the classroom have not been examined using a case study. The purpose of this project study was to examine the experiences of elementary school teachers regarding educational technologies used in the classroom. The conceptual framework was Bruner's theory of instruction, which describes that instruction should increase students' ability to understand, transform, and transfer what they are learning. The research questions were about the experiences of teachers regarding the integration of technology in the elementary school classroom. Using a purposive sample, qualitative data were collected through semistructured interviews of 10 regular classroom teachers. Data were analyzed using axial coding and thematic analysis to identify themes. The findings revealed: (a) technology integration in the classrooms has the potential to improve education for elementary school students to apply new knowledge, (b) technology integration in the classrooms helps elementary school students to improve their literacy skills, (c) technology integration in the classrooms is challenging, and (d) teachers need professional development on technology integration in the classrooms. The findings supported the development of 3-day professional development to help teachers with the integration of technology into the classroom. Positive social change may occur by helping school stakeholders to improve the academic abilities of elementary students to graduate from school.

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Dedication

I dedicate this project study to God, my family, and my friends.

My family and friends inspired my scholarly endeavors to complete my EdD at Walden University. My daughter Lakeisha T. Jones was my biggest fan along with two of my dearest friends Martha Jackson-Banks, and Faye Cole. I will forever be grateful to them.

To Dr. Peter Kiriakidis, my inspiring chair, thank you for always having an upbeat and optimistic view and for continually reminding me that I had it in me to finish strong. Dr. Kiriakidis, encouraged and supported my desire to complete my doctoral degree, even when I doubted my capabilities. Again, I thank you, and I will always be grateful that God allowed you to be one of my biggest supporters.

To Dr. Maureen Ellis, my inspiring second chair, thank you for always having a positive and optimistic view and for constantly reminding me that I had it in me to finish strong. Again, thank you, Dr. Ellis, for all that you did for me during the process.

Acknowledgments

Sincerest regards to Dr. Peter Kiriakidis, I will forever be thankful. Nothing pushed me to stay the course more than the support of Dr. Peter Kiriakidis, my inspiring chair. Every student should have as fierce an advocate as he. Thank you for always calming my anxiety with encouragement, answering my Skype messages at all hours and time zones and for constantly reminding me that I had it in me to finish strong.

Finally, I want to give credit to Dr. Maureen Ellis for her support.

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Section 1: The Problem

Definition of the Problem

According to Herold (2016), public schools in the United States provide at least one computer for every five students. Most public schools use technology in the classroom (Chai, Koh, Tsai, & Tan, 2011) to meet the academic needs of students (Gooden & O'Doherty, 2015). According to the U.S. Department of Education (2018), students who engaged in small groups of technology-based projects increased their interaction with peers and teachers. Students need to learn how to use technology (Klein, 2015) such as tablets and iPads (Niccoli, 2015). Technology is an integral part of the educational process (Hall & Hord, 2014) and can be used to prepare students for the 21st century (Walker, 2015).

Educating students how to properly use advanced technology to learn, problem solve, apply research, and collaborate at an early age can help prepare them for real-world endeavors (Cviko & Voogt, 2012). Integrating technology should be well-organized in supporting the school goals and mission (Herold, 2016). Technology integration is a very wide-ranging concept and has several aspects and implications and is not always inclusive in the core curriculum (Chai et al., 2011). According to Puckett (2013), technology integration in the classroom is an important component for students' success in core subjects. Gibbone, Rukavina, and Silverman (2010) stated that technology influenced the way educators plan, design instruction, and assess their students.

As the task and responsibilities of teachers are changing, leadership attributes influence the integration of technology to improve teaching and learning in their schools

(Hall & Hord, 2014). The barriers to effective technology integration in classrooms throughout the country result in significant problems for school districts. School districts should capitalize on the educational benefits of technology as mandated by Department of Education (2016). The governor passed a law requiring all public and private schools to offer computer science classes to its students so that they will be able to compete on a global scale (Department of Education, 2016). Teachers who are integrating technology into the classroom not only help the students but also enhance the teachers' knowledge and ability as some barriers are removed in the use of technology. The experiences of elementary school teachers regarding technology integration in the classroom were examined using a qualitative case study. The findings could help school administrators with valuable information regarding technology integration.

Rationale

Evidence of the Problem at the Local Level

The Common Core Standards include many standards related to technology use by students, beginning at the Kindergarten level. Essentially, students are required to integrate technology in order to meet these standards. Teachers should integrate technology (Walker, 2015). Standardized testing for students is performed using the American College Test (ACT) Aspire (https://www.discoveractaspire.org/about-us/). The ACT test is taken on computers by the individual students. The goal of the state test is for all students to score at or above the proficient level (Department of Education, 2016/2018).

The research site, which is a local school district, needed improvement for several years (Arkansas Department of Education, 2017). A technological plan was put in place to help teachers to integrate technology into the curriculum (district school administrator, personal communication, August 29, 2017). The technology plan includes information about the district's vision and mission on technology and encouraging more technology use in the classroom. Teachers at the research site are required by the school district administrators to use technology in the classroom for students to become overall successful in the learning environment in order to pass state exams (school administrator, personal communication, August 27, 2017). Senior district and school administrators encourage teachers to improve technology integration into the curriculum (school administrator, personal communication, August 27, 2017).

The experiences of elementary school teachers regarding technology integration in the classroom were not examined at the research site (district school administrator, personal communication, August 29, 2017). The focus of this qualitative case study was to examine the experiences of elementary school teachers regarding technology integration into the curriculum. The findings of this project study help teachers with the integration of technology into the classroom. Students could benefit from teachers who integrate technology in the classroom and graduate from school.

Evidence of the Problem from the Professional Literature

Teachers place positive value on the use of technology (Hsu, 2016). Teachers' perception of technology is that student engagement increases with the effective use of technology and the teacher's technology integration in the classroom (Holt, 2015).

Teachers' perceptions of barriers to using computers include inadequate training opportunities (Nikolopoulou & Gialamas, 2015; Rabah, 2015). Teachers need professional development to promote effective technology integration in the classroom (Er & Kim, 2017). Teachers need to know how to integrate technology (Liang, 2016).

According to Joo, Park, and Lim (2018), teachers reported that technological pedagogical content knowledge positively influenced their perceived usefulness of technology in the classroom. Technology-related change in teachers' practice is guided by confidence engaging in and beliefs about technology integration (Howard & Gigliotto, 2016). Karademir, Erdoğdu, and Gökçearslan (2017) examined the use of Web 2.0 tools such as Wikipedia, Facebook, and blogs by teachers in the classroom and reported that peer learning promotes computer skills, high level learning skills.

Durak and Saritepeci (2017) found that the effect level of technology use by teachers in the classroom was moderate. Alenezi (2017) examined educational obstacles in using technology in the classrooms and found that the level of comfort to use technology was teachers' obstacle. Mitchell, Wohleb, and Skinner (2016) found that teachers with fewer years of teaching experience utilized technology more than seasoned teachers.

Demirbag and Kilinc (2018) examined teachers' resistance to educational technologies. Demirbag and Kilinc suggested enhancement strategies for teachers to use educational technologies. Villalba, Gonzalez-Rivera, and Diaz-Pulido (2017) examined teachers' barriers about integrating technology in the classroom and found that training for teachers was needed. Carver (2016) examined K-12 teachers' perceptions of the

barriers to technology integration and found that the availability of technology was most frequently identified as a barrier.

According to Liu, Xu, and Pnge (2016), teachers reported that technology tools have the potential to help children learn. Chaaban and Ellili-Cherif (2016) reported that teachers revealed consistent perceptions about obstacles to technology integration. Pittman and Gaines (2015) found that the strongest barrier to technology integration was a lack of available computers and hardware.

Ihmeideh and Al-Maadadi (2018) found that training increased teachers' awareness and understanding of the value and applications of technology integration. Doron and Spektor-Levy (2018) revealed that teachers need support to better integrate laptops into their teaching practices. Ersoy and Bozkurt (2015) reported that teachers need professional development to use interactive whiteboard in the classroom.

Teachers' perspectives of use of instructional technology, understanding of this technology, and feelings about the support structure associated with this equipment have been examined with the findings suggesting that teachers believe technology is an integral part of the process of educating their students (Arkansas Department of Education, 2016). Educational technology is one of the fastest growing parts of society and has become a cornerstone for efforts to improve students' performance at Grades K-12 schools (Puckett, 2013). According to Puckett (2013), technology integration in the classrooms can be highly effective with various forms of implementation. Incorporating new methods such as smartboards and interactive computers help bridge the gap in learning. According to Puckett (2013), elementary students seem to have a better

outcome with multimedia applications than students in upper grades. Teachers should rely on technology to teach students (Honan, 2010).

Technology integration into the classroom can enhance the learning process. One process is known as technology-enhanced learning (TEL) (Puckett, 2013). The introduction of these programs generated high expectations for school administrators and teachers to have the ability to enhance student learning through the incorporation of technology in the classroom (Puckett, 2013). However, actual results have been somewhat dismal in comparison to anticipated results (Sinclair, 2009). Integration of technology does not fit a one-size fits all persona.

The increased call for needed changes in education and delivery methods can be directly attributed to the technological revolution incurred in recent years. Classrooms that consist of blackboards and desks appear to be outdated. The generation of children today is born into a vast society with highly evolved technological devices. Consequently, continuing to use antiquated methods makes it harder to reach students (Gu, Zhu, & Guo, 2013). Technological education policies have been implemented to prepare students to develop technological skills (Shuler, 2014). Educational policies should not only focus on students' standardized test scores (Weler, 2014).

According to Flanagan, Bouck, and Richardson (2013), technology has the potential to improve education for all students. One of the factors of integration of technology in the classroom is the ability of teachers to integrate technology and to use instructional activities to meet the academic needs of students. The focus of the integration of technology is on student-focused based learning, which includes learning

how to use technology. The benefit of technology in the classroom depends on how it is implemented by the staff, teacher competency levels with the given technology, the degree to which the technology is utilized in the classroom, and the type of technology used (Sinclair, 2009).

The incorporation of technology in the classroom can be quite useful, as "the use of virtual environments for collaboration and learning can result in an unprecedented flow of ideas, leading to higher levels of productivity" (Chandra, Theng, Lwin, & Foo, 2009, p. 2). Effective use of computer technology within the classroom can exponentially add to educational opportunities; however, teachers are not embracing this benefit. Researchers have reported that teachers were highly educated and skilled with technology, but were not using this information on a consistent basis with instruction (Bauer & Kenton, 2005). Many schools lack the proper resources to provide sufficient opportunity for teachers to incorporate their knowledge or put into place required technology integration into the classroom (Gooden & O'Doherty, 2015). The lack of a technological background caused many administrators to believe that any technology is good technology (Thoermer & Williams, 2012). This line of thinking generally leads to additional barriers to technology integration (Pukett, 2013).

Definitions of Terms

Perception: A way of regarding, understanding, or interpreting something; a mental impression (Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Swndurur, 2012).

Professional development (PD): Process of improving and increasing capabilities of staff through access to education and training opportunities in the workplace, through

outside organizations, or through watching others perform the job (Lawless & Pellegrino, 2007).

Technology integration (TI): The use of education technology in all content areas in schools in order to help students to apply technology skills to learning and problem-solving. The curriculum drives the use of technology and not vice versa (Lawless & Pellegrino, 2007).

Purpose of Study

Technology is available in every elementary classroom at the research site. Teachers' experiences were examined regarding the use of technology in the classroom. The purpose of this project study was to examine the experiences of elementary school teachers regarding educational technologies used in the classroom.

Significance of the Study

According to Lim, Zhao, Tondeur, Chai, and Tsai (2013), there are two significant gaps in educational use that need to be addressed. The gaps are usages and outcomes (Lim et al., 2013). The gaps in integrating technology into the classrooms can remain a constant issue unless preventive measure and assistance are provided to teachers to help them guide instruction to help students (Lim et al., 2013). According to Puckett (2013), technology integration has become part of the school curriculum; more than merely an enrichment class to be taken once a week. Furthermore, integrating technology has become part of the learning experiences in core subjects (Puckett, 2013).

Findings from this study will be presented to the board of education, the school administrators, and faculty. Findings can provide stakeholders, such as teachers, school board members, administrators, policymakers, and researchers with information about why teachers do or do not integrate technology-driven instruction. School district administrators could use the findings of this study to make decisions to allocate technology resources. School administrators could offer professional development opportunities to help teachers with technology-driven instruction. School administrators could encourage teachers to implement technology-driven school activities. Thus, school and district administrators could provide resources and professional development training to teachers to develop school activities to help their students pass state and district assessments.

Elementary school teachers may use the findings to successfully integrate technology into their day-to-day classroom instructions. The findings of this study include strategies on how to strengthen the elementary school teachers' use of technology and help them become more proficient in the use of technology integration in their classroom. Also, the findings may better prepare students to pass the state assessment test that is given toward the end of the school year on school computers. Teachers could use the findings of this study to help these students graduate from school by passing state exams. Teachers could also focus on helping students to succeed academically.

Research Question

The experiences of elementary school teachers regarding technology integration in the classroom have not been examined at the research site using a case study. The

purpose of this project study was to examine the experiences of elementary school teachers regarding technology integration in the classroom. The following research question guided this qualitative project study:

RQ: What are the experiences of teachers regarding the integration of technology in the elementary school classroom?

Review of Literature

According to Puckett (2013), technology integration in the classrooms can be highly effective with various forms of implementation. Incorporating new methods such as smartboards and interactive computers help bridge the gap in learning. Teachers should rely on the technology to teach students and use in educational situations that warrant its use (Honan, 2010). Technology is an integral part of the process of educating their students (Arkansas Department of Education, 2016). According to Flanagan, Bouck, and Richardson (2013), technology has the potential to improve education for all students.

Conceptual Framework

Technology integration is a state initiative that the governor of Arkansas has been pushing since he has been in office. Technology initiatives and resources provide leadership, support, and services to educators in the area of training, end-user support, best practices, and development of new educator tools to support school districts around the state (Education, 2014). The local school district is requiring more and more technology integration in the classrooms.

The conceptual framework for this study is the theory of instruction (Bruner, 1915). Bruner reported that the intelligent mind creates from experience "generic coding systems that permit one to go beyond the data to new and possibly fruitful predictions" (Bruner, 1957, p. 234). Cognitive growth involves an interaction between basic human capabilities and "culturally invented technologies that serve as amplifiers of these capabilities" (Bruner, 1957, p. 234).

Bruner (1957) referred to symbolic representation, which is language-based, as a way in which information is stored and encoded in memory as words or mathematical symbols. Bruner's theory suggests that adult learners follow a progression to symbolic representation and are capable of learning any material so long as the instruction is organized appropriately. Bruner stated that active learners construct their own knowledge. Based on this theory, teachers can use technology to teach students complex ideas by teaching at a simplified level first and then revisit at more complex levels later on. Thus, teachers who use technology in the classroom would teach at levels of gradually increasing difficulty in order to help students solve problems by themselves.

The concept of discovery learning implies that students construct their own knowledge for themselves and teachers facilitate the learning process. Teachers who integrate technology into the curriculum would help students construct their own knowledge by organizing and categorizing information using a coding system such as a computer program to teach math concepts. When educational programs are used in the classroom, students develop a coding system being taught by the teacher (Bruner, 1957, p. 235).

According to Bruner (1915), the result of instruction is to create a form of mastery that is contingent upon the perpetual presence of the teacher. Bruner believed that curriculum should foster the development of problem-solving through inquiries and discovery. Teachers integrating technology in the classroom on a daily basis can be directly tied to Bruner's way of thinking because teachers are creating problem-solving and inquiries opportunities for students daily.

At a public elementary school, which is the study site, teachers have been integrating educational technologies in the classroom. The conceptual framework describes that instruction should increase students' ability to grasp, transform, and transfer what they are learning. The research questions are about the experiences of teachers regarding the integration of technology in the elementary school classroom. The underlying phenomenon that grounded this study is technology integration into the elementary school curriculum. Understanding the experiences of teachers regarding the integration of technology in the elementary school classroom is critical to the success of students, schools, and the local community. Because teachers have been integrating technology in the elementary school curriculum, the need to understand the experiences of teachers regarding the integration of technology has been urgent.

Students construct knowledge and interpret their learning experiences based on their professional relationship with teachers. Teachers construct educational technology knowledge and interpret their teaching experiences based on their professional relationship with colleagues. The quality of these professional relationships can influence students' motivation to complete high school. Schools provide access computer

educational programs (Highsmith & Erickson, 2015) to help students (Adams, 2015) with the use of explicit instruction blended with inquiry-based learning (Bottage, Ma, Gassaway, Toland, & Butler, 2014). Integration of technology is a blended model of inquiry-based learning (Verdine, Irwin, Golinkoff, Michnick, & Hirsh-Oasek, 2014).

Understanding the experiences of teachers regarding the integration of technology into the curriculum can help teachers understand how to create an effective learning environment that will contribute to student learning. Bruner's theory means that teachers find a way to implement practices that increase the likelihood that students are motivated to learn. To explore the experiences of teachers regarding the integration of technology into the curriculum in this doctoral study, I created an interview protocol to gather information via interviews. Gathering this input will help me answer the research question.

Review of the Broader Problem

At a public elementary school, teachers have not been successful in integrating educational technologies in the classroom. The experiences of elementary school teachers regarding technology integration in the classroom have not been examined at the research site using a case study. The purpose of this study was to examine the experiences of elementary school teachers regarding educational technologies used in the classroom.

The literature review included several databases such as SAGE and ERIC. Search terms that I used to locate related peer-reviewed and other material were as follows: *theories for technology integration, technology, learning, technology and learning, technology and teaching, suggestions for integrating technology into the classroom,*

professional development, standardized scores and technology integration, teachers and technology, strategies to integrate technology, barriers to technology integration, learning activities and technology, and teachers' experiences with technology. I selected peer-reviewed articles based on their generalizability and relevance to the project study. Integrating technology into the classroom can be a complex process.

1. Learning the technology,
2. Using technology in the teaching and learning process, and
3. Integrating technology to enhance student learning (Dockstader, 1999).

Teachers' Perceptions Regarding the Use of Technology

According to Mata, Lazar, and Lazar (2015), teachers use technology to help students to develop technology skills. Teachers' perception of technology is that student engagement increases with the effective use of technology and the teacher's technology integration in the classroom (Holt, 2015). Teachers' perceptions of barriers to using computers in early childhood settings included inadequate training opportunities (Nikolopoulou & Gialamas, 2015). Carver (2016) found that the availability of technology was most frequently identified as a barrier. Pittman and Gaines (2015) found that the strongest barrier to technology integration was a lack of available computers and hardware.

Teachers' Need of Professional Development

School leaders can also help teachers with professional development regarding technology integration in the classroom (Er & Kim, 2017). A barrier to technology integration is teachers' lack of training (Hsu, 2016). Liu, Ritzhaupt, Dawson, and Barron

(2017) reported that the availability of quality technology support was related to classroom technology integration. Mitchell, Wohleb, and Skinner (2016) reported that teachers need adequate technology training. Ogirima, Emilia, and Juliana (2017) recommended that teachers should be trained and retrained on the use of assistive technology. Ihmeideh and Al-Maadadi suggested training programs for teachers to increase the successful integration of technology in the classroom. Doron and Spektor-Levy (2018) revealed that teachers need support to better integrate laptops into their teaching practices.

Implementation of Educational Technologies

The mission of the school districts is to help prepare all students to be successful in the 21st century (Riles, 2018). Education stakeholders strive for high-quality education for all children (Maryono, 2016). Educational technologies are important to the whole-child development (Superville, 2017). School district stakeholders should be involved in improving academic achievement (Stone-Johnson, 2015). Stakeholders need to be involved in improving academic achievement (Stone-Johnson, 2015). Implementing technology assists schools in becoming an effective medium for preparing students for their future outside of the classroom. Technology has become an important part of the educational foundation. Efforts to constantly improve teaching and learning through technology are increasingly advancing. With the importance of technology, integration in the classroom is highly emphasized in teacher training and professional development. However, these efforts are not met without resistance. Teachers feel as if they are still

not provided with adequate support for successful integration of technology in the classroom (Anthony & Clark, 2011).

Curriculum and Educational Technologies Challenges

Technological integration is defined as the use of technology involving the infusion of technology as a tool to enhance learning in a content area or a multidisciplinary setting (Labbo & Place, 2010). This integration includes, but is not limited to, creating written assignments and electronic journals. However, far too often, teachers are unable, or not fully prepared to partake in many of the innovations of technology due to lack of knowledge or a lack of desire to learn such knowledge, placing them and their classroom at a disadvantage (Anthony & Clark, 2011). In efforts to address these concerns, the technological pedagogical content knowledge (TPCK) has been used to understand what knowledge and skills teachers lack and what professional development needs to target in order to systemically improve effective use of technology in teaching (Chai et al., 2011). The construct validity of TPCK survey was contextualized for the pedagogical approaches. The comparison between the pre and post course models revealed that teachers improved the use of technology in teaching.

Schools often lack the supplies that students need to access computer educational programs (Highsmith & Erickson, 2015). Students need access to computer educational programs to assure that their creativity is fostered (Adams, 2015). Educational programs may affect students' future by making them more competitive for jobs (Chapman, 2013). For example, Firmender, Gavin, and McCoach (2014) stated that students need verbalizing their thought process when learning and teachers need to model through

instructional practices. Another example is the use of explicit instruction blended with inquiry-based learning (Bottage, Ma, Gassaway, Toland, & Butler, 2014). Integration of technology into the curriculum can be described as a curriculum built around a blended model of explicit instruction and inquiry-based learning (Bottage et al., 2014).

Integration of technology into the curriculum is needed for students to process information (Verdine et al., 2014). Teachers should provide students with educational technologies in the classroom in order to meet the needs of the students for them to be more successful at school (Verdine, Irwin, Golinkoff, Michnick, & Hirsh-Oasek, 2014). Schools should provide access for students to information on the Internet (Netcraft, 2016).

Educational Standards and Technologies

Many educational standards have been put in place to assist in creating a higher level of education for all children in the United States. The No Child Left Behind Act of 2001 (NCLB) increased the federal government's role in ensuring schools were being held accountable for student outcomes (Klein, 2015). The International Society for Technology in Education (ISTE) Standards were created to help provide connected learning in a technological world. The ISTE Standards provide administrators and staff a roadmap for designing their classrooms for the new digital age and helps create a conducive environment for effective educational technological integration. In 2014, ISTE released new standards focusing on using technology to teach and learn in the classroom (Iste, 2016). Teachers are required to use standards to facilitate student learning, design, and creativity with a digital learning experience current with today's

technology. The NCLB (2001) made provisions to compliment ISTE in the efforts to bolster the use of technology in classrooms. Although standards have been put in place to help foster a positive learning experience, it still does not guarantee compliance from some teachers and administrators. According to Finley and Hartman (2004), these standards were not enough to ensure the integration of computer technology in the classroom.

How to Integrate Technology into the Classroom

Researchers have shown the effects of technological integration into the classroom are more successful when using cognitive tools centered on helping teachers engage students in authentic technology-enabled learning settings (Etmer & Ottenbreit-Leftwich, 2013). Technology allows students and teachers to interact in more life-like situations versus simulations (Etmer & Ottenbreit-Leftwich, 2013). Teachers need to understand the role technological integration plays within the district and among the individual students. When teachers are uncomfortable, technology is often limited or not used at all (Puckett, 2013). Teachers may fear of not being able to perform effectively in front of the classroom or being unable to effectively teach using foreign means to the teacher (Puckett, 2013). Using feedback from teachers can become and effective tool for creating training tools that are conducive to the needs and desires of the teachers that will foster positive learning.

Despite the promise of technology in education, many teachers face several challenges when trying to effectively integrate technology into their classroom instruction. Additionally, while national statistics cite a remarkable improvement in

access to computer technology tools in schools, teacher surveys show a consistent decline in the use and integration of computer technology to enhance student learning (Herold, 2016). There are many factors that affect the successful integration of technology in the classroom. Some of these factors include, but are not limited to:

1. Perceptions about the nature of knowledge and learning
2. Beliefs about effective ways of teaching
3. Technology integration practices relation to one another (ChanMim, Mim, Chiajung, Spector, & DeMeester, 2013, para 2).

Other studies indicated that teachers' actual beliefs, particularly in terms of classroom technology practices, often did not coincide with their own beliefs (Puckett, 2013). Researchers concluded this was due, at least in part, to a variety of outside barriers that hindered teachers from using technology in ways that were associated with their beliefs (Ertmer et al., 2012).

Perspectives of Educational Stakeholders and Technology Integration

Administrators are constantly looking for means to incorporate technology with limited challenges. Cviko and Voogt (2012) examined ways for technological integration using PictoPal as a way to measure teacher perceptions about teaching and learning, as it relates to technology and innovations. This research also examined the knowledge, self-efficacy, pedagogical beliefs, and subject and school culture, and factors that enable meaningful technology use in the classroom. Cviko and Voogt (2012) found that professional development programs are important contributors as teachers implement and integrate new technology into the classroom.

Teachers' attitude and practice as related to technology integration area critical driving force. Many teachers find the integration difficult due to barriers such as class size, budgeting, and professional development training (Gibbone & Silverman, 2010). A survey found 39% of teachers use computers and software to construct instructional material; 34% use it for keeping a record of grades, and less than 10% use it to access model lesson plans (Gibbone & Silverman, 2010).

Studies have also indicated a significant difference and positive correlation between teachers' current level of computer training, comfort level, and computer usage in the classroom as compared to previous training (Guha, 2000). Mazo (2001) found many students drawn to classes that significantly used technological advances, began to incorporate this technology into other classes they had difficulty and were able to progress.

There are a number of projects and research studies that have concluded teachers who are highly educated and advanced with technology were more innovative and adept in the classroom, significantly incorporating technology as a learning tool (Bauer & Keaton, 2005; Kotrilik & Redmann, 2005; Zhao, 2007). These researchers also indicated many schools have yet to achieve total technological integration.

Elementary School Students in the 21st Century

Schools should invest into technological devices to help promote learning in the classroom (Walker, 2015). According to Holland and Holland (2014), if a mobile device is placed in a student's hand, then the student will be better prepared for the jobs of tomorrow. Elementary school students should develop technological skills in the 21st

century (Murphy & Torff, 2016). Students need to know how to use technology to analyze information (Saavedra & Opfer, 2012). Students also need to know how to use technology for their careers (Magner, Soulé, &Wesolowski, 2011). Students need to access and analyze 21st century information (Paige, Smith, & Sizemore, 2015).

Differentiated Instruction

Teachers use instructional strategies to assist students (Kaldi, Filippatou, & Anthopoulou, 2014). For example, cooperative learning strategies and educational technologies improve student achievement in most academic subjects and grade levels (Kaldi, Filippatou, & Anthopoulou, 2014). Teachers who implement learning strategies help students improve academically (Kaldi, Filippatou, & Anthopoulou, 2014).

Tomlinson (2000) defined differentiation as modifying instruction to respond to individual needs. Students need instruction that is engaging (Walker, 2008). Students need competent teachers who provide differentiated instruction that meets their individual learning needs (Allington, 2006). Differentiated instruction is not one-on-one tutoring or a quick-fix method to end problems associated with learning difficulties (Gaskins, 2005). Teachers need to respond to the intellectual nature of students and to teach critical thinking skills (Allington, 2006). Teachers need to create a classroom where students establish realistic learning goals (Allington, 2006).

Classroom Environment and Technology

Elementary classroom setting is important to students. Fast, Lewis, Bryant, Bocian, Cardullo, Rettig, and Hammond (2010) investigated the classroom setting of Grades 4 and 6. Students viewed classroom setting in a positive aspect (Fast et al., 2010).

Savas, Tas, and Duru (2010) reported that students had better performance if they attended a school, which had integrated technology into the curriculum. Karatas and Baki (2013) examined the learning environment in a Grade 7 classroom and found that students who received instruction in a problem solving-based learning environment were more successful than students who were taught using the regular curriculum.

Educational Technologies

Computer educational programs have also been integrated into the curriculum (Genao, 2013). Grady et al. (2012) examined a Grade 6 mathematics program that was used in three different schools and reported no significant achievement differences among Grade 6 students. Hickey et al. (2001) examined a Grade 5 math educational program to implement change in the curriculum in 19 classes. Hickey et al. (2001) reported that students who used the program had lower subjective competence in comparison to their counterparts. Anthony and Clark (2011) examined how a laptop program addressed issues and strategies to effectively integrate technology in the classroom. Anthony and Clark (2011) reported that teachers' use of technology can be limited.

Technology Use in the Classrooms

According to Murphy (2014), state policies are requiring higher expectations for technology access in the classroom. Teachers have been using technology into their everyday instruction (Friedman & Garcia, 2013). Students are familiar with technology such as music players, smart phones, tablets, and iPads. iPads display different content in a variety of formats making learning interesting for students. Educational institutions

across the United States have started purchasing iPads for use in the classroom (Anthony, 2014). Researchers have reported positive relationships between the use of iPads in classrooms and student achievement (Cumming et al., 2014). Haydon et al. (2012) examined students' work on an iPad versus doing a worksheet by hand with high school students and reported that students were able to complete more problems on the iPad because the iPad provided instant feedback. iPads have been integrated into the curriculum (Walker, 2015). Hutchinson et al. (2012) conducted a case study about the use of iPads in a Grade 4 classroom. Students were able to access work anywhere in a classroom and were able to respond to text. iPads were used to support learning. For literacy instruction, Hutchinson et al. (2012) reported that technology should be used for curricular integration.

Simpson et al. (2013) also examined literacy and iPads in schools. Simpson et al. (2013) found that learning is changing with iPads. Student who use iPads are interacting, with other students. Thoermer and Williams (2012) reported that students want to read digital text that can be accessed through the iPad. Niccoli (2015) reported that students perform worse in reading comprehension from digital texts. Retter et al. (2012) examined the effects the iPad had on reading comprehension and found that there was no correlation between using the iPad and an increase in reading fluency. Friedman and Garcia (2013) examined how iPads can be used in classes. They found that students were highly engaged with the learning material. Freidman and Garcia's (2013) concluded that there is a gap in research when it comes to the iPad and classroom use. McClanahan et al. (2012) recommended that teachers should use technology to help students in learning.

Professional Development for Teachers

Professional development (PD) is imperative in education (Giraldo, 2014). Teachers prefer customized PD to improve classroom performance (Giraldo, 2014). PD should help teachers to increase knowledge in discipline (Engelbrecht & Ankiewicz, 2016). PD helps teachers enhance their skills (Koellner & Jacobs, 2015).

Educational leaders should PD sessions that represent best teaching practices (Mazzotti, Rowe, Simonsen, Boaz, & VanAvery, 2018). Educational leaders should identify the needs of teachers and align PD activities to address those needs (Mandinach & Gummer, 2016). PD sessions should be designed to give teachers support throughout the school (Qian, Hambrusch, Yadav, & Gretter, 2018). Teachers learn from PD how to implement learning strategies in their classrooms (Qian et al., 2018). PD should be aligned with curriculum to prepare teachers to integrate technology into the curriculum (Qian et al., 2018).

Teachers attending PD learn about learning communities (Patton, Parker, & Tannehill, 2015) and engage with other teachers to learn from each other (Zepeda, Parylo, & Bengtson, 2014). PD helps teachers learn how to foster learning (Kennedy, 2016). School administrators could support teachers via PD regarding best teaching practices (Mazzotti, Rowe, Simonsen, Boaz, & VanAvery, 2018). Mentoring via PD could help teachers in improving teaching strategies (Augustine-Shaw & Hachiya, 2017). Teachers should use PD to provide high-quality instruction that builds upon students' strengths (Mazzotti et al., 2018). PD is imperative for keeping teachers informed of new implementations of curriculum (Dessoff, 2012). Teachers are more likely to provide help

to students if they participated in PD (Sun et al., 2013). PD sessions have a positive effect on teachers (Sun et al., 2013). Russell et al. (2003) investigated how technology is used for instruction and reported that teachers with technology training were more confident in using technology.

PD sessions should focus on the needs of the learners (Basye, 2014). Teachers in the 21st century need PD regarding student learning (Reeves, 2011). Teachers need help in using instructional strategies (Bostic & Matney, 2013). PD should focus on building professional relationships through shared responsibilities (Wagner, 2012). For example, teachers need to know how to prepare students in using computation via technology (Parrish, 2010). Thus, teachers need professional learning (De Naeghel, Van Keer, Vansteenkiste, Haerens, & Aelterman, 2016) because the teacher's role is important for the overall success of the school (Migliaccio, 2015).

The focus of educational technology PD should be on literacy and numeracy (Israel & Fine, 2013; Moursund, 2013; Reis et al., 2011). PD on teaching strategies can help students develop self-monitoring tools for learning (Daniels, Marcos, & Steres, 2011). PD on technology interventions can help teachers help learners who need motivational tools for brain stimulation to meet their needs in and outside of class (Ortlieb, Grandstaff-Beckers, & Cheek, 2012).

Learning with Technology

Skinner (1964) invented a teaching machine to use programmed instruction (PI) to give the learner more control over their learning. PI as a computer-based instruction has been the basis for educational technology. Technology benefits students by enhancing

student engagement in learning and strengthening the use of problem solving strategies (Metiri Group, 2006). An important attribute of educational technology is the interaction with the student because students' progress through the learning activities at their own pace (Meyer et al., 2011). Educational technology provides students with immediate feedback (Mckie et al., 2012).

Incorporating educational technology can help teachers address students' limitations with understanding the curricula (Kimmons, 2014). Technology is necessary in regards to meeting academic needs of students (Kimmons, 2014). Modern day technology helps teachers develop teaching activities that involve constant decision making and monitoring (Wu, 2014). Teachers need to motivate students to do well in the classroom (Justice & Mearace, 2016). Teachers need to have skills in the use of technology (Militello, Fusarelli, Mattingly, & Warren, 2015). When teachers feel comfortable with technology then there is a resulting positive effect on students and their achievement (Mertler, 2016).

Implications

To date, the experiences of elementary school teachers regarding technology integration in the classroom have not been examined at the research site using a case study. The purpose of this study was to examine the experiences of elementary school teachers regarding educational technologies used in the classroom. The findings of this study may result in social change by strengthening students' literacy support, thereby allowing students to succeed academically.

Summary

This case study was designed to understand the experiences of teachers concerning technological integration. As evidenced from the literature, technology is rapidly changing and being implemented in schools and classrooms across the country. Students are highly motivated by the use of technology in the classroom and out. A qualitative approach is most suited for this study because qualitative research is framed by capturing the essences of people's perceptions, idea, attitudes, and beliefs about a particular problem. Different themes will emerge as the research is conducted and analyzed from the results of the finding.

In Section 2, a description of the methodology for this study including data collection and analysis are presented. In Section 3, a description of the project for this study including data findings will be presented. Section 4 will present my reflections as a learner during this project study as well as the strengths and weaknesses of the project as it addresses the problem and the implications for future research opportunities.

Section 2: The Methodology

This section of the project study contains specifics about the qualitative methodology used for this doctoral study. In Section 2, I discuss the participant sample, access procedures, methods for data collection, and data analysis methods, findings and themes. The findings may be used by teachers to integrate technology into the curriculum.

Research Design and Approach

The purpose of this project study was to examine the experiences of teachers at a local elementary school regarding the integration of technology in the elementary school classrooms. Due to the significant call for teachers and students to be prepared for the growing changing in the 21st century, it was necessary to conduct a study to examine the experiences of teachers concerning technology integration.

The methodology of this study was qualitative. Qualitative research is used to address a problem in which the variables are not known, and the problem needs to be explored (Creswell, 2012). A case study was conducted at the local school. I examined teachers' experiences of technology integration in the classroom. The following research question guided this qualitative project study:

RQ: What are the experiences of teachers regarding the integration of technology in the elementary school classroom?

Qualitative Case Study Design

I used a qualitative case study design used to understand phenomena related to technology integration in the elementary classroom. Using a qualitative case study

approach, I gathered the experiences of teachers regarding technology integration. I examined a bounded system that consists of elementary school teachers. Case study research is often used to seek deeper understanding of a phenomenon through explanatory questions such as “how”, “what”, and “why” (Lodico et al., 2010). I conducted a qualitative case study to gain insight and in-depth understanding of elementary school teachers experiences related to the phenomenon of technology integration into the curriculum (Lodico et al., 2010).

Justification of Research Design

I did not determine if a relationship existed between an independent variable and a dependent variable (Creswell, 2012). I did not collect numerical data and did not have independent and dependent variables; therefore, I considered quantitative methods to be inappropriate for this study. The purpose of a grounded theory is to generate a theory of an action providing a framework for further research (Creswell, 2012). I was not seeking to create a theory about elementary school teachers’ experiences related to the phenomenon of technology integration into the curriculum. I did not select grounded theory for this study. I also did not select an ethnographic design because the focus was not on an entire cultural group (Creswell, 2012). A narrative study design describes the experiences as expressed in lived and told stories of individuals (Creswell, 2012). For the purpose of this study, I did not gather or interpret the stories of the participants (Creswell, 2012). For the purpose of this project study, I interviewed the participants. I conducted the interviews by guided conversations with the participants.

Participants

Population and Sampling

The setting for this project study was one public elementary school within an urban school district located in the southern United States. I selected the target school because according to the senior district administrator at the study site, the target teachers integrate technology into the classroom. According to the senior district administrator at the project study site, the dropout rate is between 4% and 10% annually and the graduation rate is 30%. The elementary school has 20 Grades K-4 teachers, two special education teachers, one literacy coach, one math coach, one reading recovery teacher, one counselor, one principal, and one assistant principal. The total enrollment for the academic year 2017-2018 was 250 students in Grades 1-6, which 135 were girls and 115 were boys. Of the 250 students, 121 students receive free-or-reduced meals and were identified as special education students.

Criteria for Selection of Participants

Purposeful sampling was used as the participants were intentionally selected to participate in the study (Creswell, 2012). The selection criteria included teachers who were: (a) teaching at the study site for over 2 years, (b) state certified, and (c) integrating technology into the classroom. I identified the participants who have been teaching, at the school, for at least 2 years, are state certified, and integrate technology into the curriculum. I obtained access to the participants from the administrator responsible for IRB at the study site. I received 10 returned signed consent forms. The total participant

sample for the project study was 10 teachers who met the selection criteria and who agreed to participate in the study.

Participant Justification

The selection criteria were important to collect rich descriptions of the experiences of elementary teachers regarding technology integration into the classroom at the target site. My goal was to develop an in-depth exploration of a central phenomenon. I used purposeful sampling to select participants who had integrated technology into their classrooms. The goal was to gain insight and in-depth understanding of elementary school teachers experiences related to the phenomenon of technology integration into the curriculum

Participant Access

I obtained Internal Review Board (IRB) approval from Walden University. The school principal at the study site had the authority to approve of my project study. A letter of cooperation was hand-delivered to the school principal requesting approval to conduct the study. The letter of cooperation contained information regarding the purpose of the study, data collection method, and an overview of the project study. A copy of the letter of invitation, confidentiality agreement, and informed consent were hand-delivered to the principal at the study site to obtain their permission to have access to the school and the participants.

After the approval from the school administrator to conduct research at the study site, I obtained IRB approval (394827) from the school district to conduct the project study. After I obtained IRB approval from the school district, the principal signed a letter

on the school's letterhead granting me permission to conduct the study. The letter from the principal was submitted to the IRB at Walden University. The principal allowed me recruit the participants by talking to the teachers after their staff meeting in order for me to inform them about my project study and to ask them to return to me their signed informed consent form via email. The invitation letter informed the participants to respond to me. I provided each participant, who returned the signed informed consent form, a formal letter that included the purpose of the study, time for each interview that was agreed with each participant, and a statement that the participation was voluntary. I informed each participant that our interview would be scheduled after school hours in a conference room in the public library. I provided each participant with a copy of the consent form and explained the interview process.

Researcher-Participant Relationship

I did not know the participants and had no supervisory role over them. I established a trustworthy relationship with the participants in the study. My goal was to help each participant to feel comfortable sharing their responses to the interview protocol with me. I reminded the participants prior to the interview that they could withdraw from the study at any time with no penalty or consequence for not participating. I also reminded participants that I was to be taking notes during the interview.

I explained to each participant that my role as a researcher was that of a listener and the primary instrument for gathering data. During the interviews, I was attentive to the participants to establish rapport and to assure participants that the information shared was valuable to the study. I conveyed respect to every participant and thanked them for

their time commitment and participation in the study. As the researcher, I ensured my personal biases did not affect my judgment due to the passion I have regarding technology integration into the curriculum. According to Lodico et al. (2010), in order to portray the participants' perspectives, a researcher needs to develop an insider's point of view. My position as a teacher was beneficial because I understood the experiences of the participants without having any prior discussions pertaining to technology integration into the curriculum and without knowing the participants. During the interviews, I worked with the participants to develop a researcher-participant relationship and to answer all the questions they had about the study.

Protection of Participants

I emphasized to each participant that participation was voluntary, and that overall protection was a priority throughout the duration of this study. Before Walden University (IRB) approval, I completed the training *Protecting Human Research Participants*. A pseudonym was assigned to each participant in order to protect the participants' identities prior to, during, and after data collection. I used the letter "P" for participant followed by a corresponding number for each interviewee to code the data to the transcription. For example, the first participant is P1 without revealing their name. I am the only person who knows the identities of each participant. The identity of the participants was not used in the findings or revealed at any time to district administrators.

The participants were asked to sign an informed consent form and were assured of their confidentiality. The participants were informed that the data I collected are

protected and were only used for the project study. I am the only person who has access to the data. Codes were used instead of names to conceal the participants' identity.

Interview transcripts are stored electronically in my house in a password-protected file on my personal computer. All files containing the interview transcripts are encrypted. All nonelectric data are stored securely in a locked desk drawer located in my home office. Data will be kept secure for 5 years, per the protocol of Walden University. After 5 years, I will destroy all data that I have collected.

Data Collection

The data collection process for this study consisted of semistructured one-on-one interviews that lasted about 1 hour each, using the open-ended interview protocol (see Appendix B), and the research journal was used for me to keep notes during the interviews. The semistructured one-on-one interviews and researcher journal added to the descriptive nature of this qualitative case study analysis (Merriam, 2009). The interview protocol was used to inform participants of the questions that were asked during the semistructured interviews (Lodico et al., 2010). I informed the participants that their names would be kept confidential in order to protect their anonymity and elicit open, meaningful, and honest responses. I also informed the participants that they could withdraw from the interview or refuse to answer questions that made them uncomfortable at any time without repercussions. Interviews were the primary means of data collection for this qualitative case study. I developed the open-ended questions interview protocol with the support of my doctoral committee and technology content experts who provided me with suggestions to promote clarity. The interview questions were revised per the

doctoral study committee and content experts' feedback. This expert review panel helped me increased validity and reliability. The interview questions did not include personal or demographic information such as gender or age.

The interviews occurred at a time agreed upon after school hours at the public library in a private conference room. Semistructured, one-on-one interviews allowed me the opportunity to ask open-ended questions. The participants had the opportunity to ask me questions during the interview session. The interviews lasted between 45 and 60 minutes per participant. I kept field notes during the interviews. I audiotaped each interview with the permission of each participant by using my smartphone. I transcribed all interviews immediately after each interview to ensure accuracy, maintain ethical standards, and to minimize researcher bias by reviewing the interview transcripts with the participants.

Role of the Researcher

My role as a school teacher allowed me to establish a good working relationship with school teachers at the study site. My current role did not affect the data collection because I did not know the participants. I am not teaching at the study site and have no supervisory role over the potential participants. I was interested in their experiences to answer the research question.

Sufficiency of Data Collection

I was hoping to have a large sample for this qualitative case study. I reached saturation until I conducted all interviews. When participants shared with me the same responses over and over and no new information was being gleaned from the interviews,

then I knew I have reached data saturation. I interviewed 10 participants. For this project study, 10 participants were a sufficient number to represent a rich description of their responses at the target site. My goal was to have 10 participants.

With the interview data, I developed a rich description of the participants' input. After transcribing and organizing my data, I conducted a preliminary exploratory analysis to acquire a general sense of the data, collect ideas, consider the organization of the data, and identify that data were sufficient. Member checking was the process by which the participants reviewed my transcribed interviews to ensure their responses were accurately recorded. The process of member checking provided credibility to the transcription and coding process (Creswell, 2012). I scheduled follow-up face-to-face meetings with the participants who agreed to meet me at the library in a private room for them to review the interview transcripts and the emergent themes. Having the participants review the transcribed interview notes and emergent themes, I ensure my personal biases were not reflected in the data. Additionally, I kept a separate reflective journal to record my own thoughts and any additional information throughout the study. During each interview, I took notes to record important information that came from non-verbal gestures. By employing a thorough review of the interview transcripts, member-checking, and my reflective journal, I was able to ensure reliability and validity in the findings of this project study.

Data Analysis

I organized the interview transcripts in order to answer the research question. During the data analysis process, I used brackets and circles to identify common quotes

and highlight commonalities in each response to each interview question. I made connections between ideas and concepts. I organized the interview transcripts using Atlas.ti 7 and conducted a line-by-line thematic analysis. Initial themes and categories emerged. Once the categories were identified, I searched for themes, patterns, and relationships within the data.

I coded the interview data into themes and included personal reflections and field notes written during each interview. I invited each participant to review the findings for accuracy and to validate my interpretations. The participants reviewed the findings with me in a private room at the public library.

I color coded each interview transcript to highlight main keywords to answer the research question. All highlighted comments were copied and pasted to two different spreadsheets, allowing me to group all information about the research question together. I reviewed each spreadsheet multiple times to determine themes and common threads through the data. Data were sorted by themes.

Evidence of Quality of Data

Once I completed data analysis, I scheduled follow-up meetings with all participants so that they could review the interview transcripts. Themes were shared with the participants during the follow-up meetings, at which time each participant reviewed the findings for accuracy Member checking is the process by which the participants reviewed my transcribed notes from the interviews to ensure their responses were accurately recorded (Creswell, 2012). Member-checking was a way to validate the study as well as provide credibility to the findings of the study. I conducted member checking

at the public library in a private room. Member checking was conducted after school hours to accommodate the participants' schedule. Each member checking meeting was about 45 minutes. Member checking was conducted for the trustworthiness of my study and contributed to the credibility of my findings. Thus, member checking was used to validate the accuracy of my interview data and findings and to ensure my personal biases were not reflected in the data but rather the data were a true reflection of the perceptions of the interviewees.

Discrepant Cases

Discrepant cases were considered. The discrepant cases can help the school and district administrators and teachers with decision-making processes regarding technology integration into the classroom. Discrepant cases can assist policymakers with support for teachers.

Data Analysis Results

Upon IRB approval from Walden University (03-19-19-0394827), I interviewed 10 participants for this project study. This sample was sufficient to represent a rich description of the participants' responses. I scheduled face-to-face interviews with each participant who agreed to meet me at the public library in a private room. During each interview, I took notes to record important information that came from non-verbal gestures. Each interview was audiotaped with the permission of each participant. I kept a reflective journal to record my own thoughts and any additional information throughout the study. I emphasized to each participant that participation was voluntary. A pseudonym was assigned to each participant. I used the letter "P" to represent a

participant followed by a corresponding number. For example, P1 was used to represent the first participant. I am the only person who knows the identity of each participant.

I organized the interview transcripts to answer the research question, which was about the experiences of teachers regarding the integration of technology in the elementary school classroom. I organized the interview transcripts using Atlas.ti 7 and conducted a line-by-line thematic analysis for emergent themes. I used brackets and circles to identify common quotes and to highlight commonalities in each response to each interview question using the interview protocol (Appendix B). I read through each interview transcript multiple times to create a summary of individual participants' responses. My coding procedure consisted of assigning colors to common responses. The following are the themes and findings from the interview transcripts.

Findings

The first theme was that technology integration in the classrooms has the potential to improve education for elementary school students. Technology is integrated into the elementary school curriculum and is consider critical to the success of students. Educational programs such as Go Noodle, News Ela, Read Works, Google, and YouTube, Apex or IXL, Google Classroom, Smartboards help students with inquiry-based learning activities.

The second theme was that technology integration in the classrooms helps elementary school students to improve their literacy skills. Technology integration in the classrooms helps elementary school students to improve their proficiency in literacy.

Reading software could facilitate students' learning and PowerPoint Presentations and publisher can be used to create literacy projects.

The third theme was that technology integration in the classrooms is challenging. Educational technologies are used to enhance learning. Teachers are faced with challenges when integrating technology in the classrooms. Teachers face challenges when integrating technology in the classrooms.

The fourth theme was that teachers need professional development on technology integration in the classrooms. Educational technologies are used to enhance learning in math, literacy, and sciences. PD is needed to learn how to successfully use technology in the classroom.

Theme 1: Technology integration in the classrooms has the potential to improve education for elementary school students. All participants have been integrating educational technologies in the classroom to help students to understand and apply new knowledge of what they are learning. Technology is integrated into the elementary school curriculum and is consider critical to the success of students. The participants reported that technology integration into the elementary school curriculum is having a positive effect on learning because students learn difficult concepts and construct new knowledge. The participants stated that technology integration into the elementary school curriculum is helping students interpret their learning and is influencing their motivation to learn new topics via inquiry-based learning. Thus, technology integration into the elementary school curriculum is helping students in

academic subjects to learn difficult concepts, construct new knowledge, interpret their learning experiences, and to be motivated to learn new topics.

All participants use programs such as Go Noodle, News Ela, Read Works, Google, and YouTube, Apex or IXL, Google Classroom, Smartboards to help students with inquiry-based learning activities. The participants use educational Websites, laptops, and Chromebooks. The participants feel comfortable using technology to include students with special needs. For example, the participants use Gizmos to help students conduct experiments and to engage students in class conversations. Another example of technology is the use of Google Classroom for independent practices, quizzes, and multimedia projects.

The participants stated that by integrating educational technologies in the classroom, students were able to understand and apply new knowledge. P1 stated that "students were able apply what they are learning." P2 stated, "Technology integration into the elementary school curriculum is a must for all academic subjects." P3 stated, "Technology integration into the elementary school curriculum is critical to the success of students." P4 stated, "Technology integration into the elementary school curriculum is having a positive effect on learning." P5 stated, "Technology integration is helping students learn difficult concepts." P6 stated, "Technology integration into the elementary school curriculum is helping students construct knowledge." P7 stated, "Technology integration into the elementary school curriculum is helping students interpret their learning experiences." P8 stated, "Technology integration into the elementary school curriculum is influencing students' motivation to learn new topics." P9 stated, "Computer

educational programs help students with inquiry-based learning. All participants stated that technology integration into the elementary school curriculum is helping students in all academic subjects because students learn difficult concepts, construct new knowledge, interpret their learning experiences, and are motivated to learn new topics. All participants use computer educational programs to help students with inquiry-based learning.

P1 stated, “I have integrated technology into my classroom by using Go Noodle, News Ela, Read Works, Google, and YouTube.” P2 said, “Technology is integrated into the curriculum through learning management systems like Apex or IXL. I also use platforms like Google Classroom to organize my classes and post assignments.” P3 reported, “Using the Smartboard and document camera allowed me to teach many of my lessons while using various resources (Internet sites) such as virtual museums in Memphis.” P4 stated, “We now have e-books available in math and science.” P5 said, “We have access to laptops and Chromebooks.” P6 said, “I am a special needs teacher. Technology is very important in the curriculum. My students feel comfortable using technology. Technology is almost a necessity for special needs children.” P7 said, “For science, we use Gizmos to conduct experiments that we normally wouldn’t be able to do because of lack of time and materials. Students conduct research using technology.” P8 stated, “One great success with technology integration is the engagement of students in class conversations.” Additionally, P5 stated,

> I use technology on a daily basis. I use a smartboard for mini lessons. I use Google Classroom for independent practice, quizzes, polls. I assign various

multimedia projects throughout the school year; all of which integrates technology. I use technology for classroom management and as a tool to stay connected with my parents. Virtual labs for labs that are difficult to do in class due to limited supplies.

P6 commented about challenge associated with technology integration,

Our school district has been taken over by the state. We have had trouble with technology in our district for many years. We have finally made some forward steps this year. Some teachers have smart boards. We have chrome book carts for the core teachers. The younger teachers know how to use technology. The middle age and older teachers need help. This year chrome books were ordered for all students. The State Department of Education is evaluating us. are available in the library. They need to be upgraded. The library has eBooks available for the students. We also have a collection of books with QR codes. These books can be downloaded also. Computers are available in the library.

P7 had a different perspective about technology integration and commented,

Integrating technology into the classroom was an easy transformation for me. During Black History month, I used the Internet to visit the Website of the Civil Rights Museum in Memphis. Showing students virtual the inside of the museum was amazing.

P8 said,

I use the Think Central and Starfall.com. Think Central was a technology piece that came with our Go Math! Books. Kids would review phonics skills and they would use those same skills for blending, segmenting, reading words, they could do short story reading in Starfall, so it reinforced a lot of the reading skills and some math skills as well. Each Website could be used for whole group or independent practice, and I also use Accelerated Reader for reading assessments

Theme 2: Technology integration in the classrooms helps elementary school students to improve their literacy skills. All participants reported that technology integration in the classrooms helps elementary school students to improve their proficiency in literacy. The participants strive to prepare students to be successful in the 21st century by using technology to provide high-quality literacy instruction to all students to improve state scores in literacy. The participants believe that educational technologies help students to improve their literacy skills by learning how to synthesize when they write stories and to do better on state tests in literacy by understanding concepts. The participants reported that their goal with the use of technologies is for students to better communicate through their writing.

For example, the participants use reading software to facilitate students' learning and PowerPoint Presentations and publisher to create literacy projects.

All participants reported that technology integration in the classrooms helps elementary school students to improve their literacy skills. P1 stated, "We strive for high-quality literacy for all students." P2 stated, "Educational technologies are important nowadays to improve state scores in literacy." P3 stated, "I use educational technologies

in order to improve students' academic achievement. P4 stated, "I use educational technologies for students to improve their literacy skills." P5 stated, "I use technology for students to learn how to synthesize when they write stories." P6 stated, "I use educational technologies for my students to write better paragraphs." P7 stated, "I use educational technologies for students to do better on state tests in literacy." P8 stated, "I use technologies for students to better communicate through their writing." P9 stated, "When I use educational technologies, I think only about students' academic achievement." P10 stated, "We need to improve academic achievement. As a result, we use educational technologies in the classroom."

P5 stated, "My experiences with technology integration in the curriculum has been positive in using reading software to facilitate students' learning. Students have also used PowerPoint and publisher to create literacy projects."

P1 stated,

> My experiences with technology integration into the curriculum are very positive. I use technology to assess our IStation reading and math scores weekly. IStation is an individualized computer program tailored to each student ability to master skills on their level. In addition to IStation, I use Journeys, a reading series to assess weekly reading stories and end of the Unit Ans: Assessments by completing these tests online. Each of these technology pieces are done online daily and weekly.

P2 said,

This year, I used a program called Epic, for reading. Students did a national challenge and read at least 50 books. Overall, for the year, we're up to like 500 literacy books. The program reads the books to the students. Using this program, students can read books by themselves.

P4 reported,

Some of my greatest successes with technology integration is the ease of use with some of the Internet use and the student friendly activities. Students have shown literacy growth after using technology. Students have enjoyed those particular educational programs. I can see some actual growth in literacy.

P5 said,

Integrating technology in the curriculum has impacted student achievement because students have to use technology to take the ACTSpire test and by students using technology in the classroom on a regular it prepares them on ways to utilize the technology to improve proficiency in literacy.

P6 reported,

The greatest impact that integration of technology is on reading skills improvement for many of my students. Just being able to read several books a day through a program entitled “My Own” has improved every student’s reading level in the classroom. There has also been a tremendous improvement in literacy scores because of all the fun ways that writing can be introduced and remediated through technology.

P3 stated, “I have found that integrating technology in the curriculum has created a greater interest for language arts, math, science, social studies, and reading. I use technology to help students enhance their literacy skills.” P4 stated, “I use technology to help students with self-directing learning literacy goals and to foster the development of literacy skills.” P5 stated, “Students are often grouped together to create literacy projects using technology.” P6 stated, “Students use Websites like Khan Academy, IXL, Moby Max, and Starfall. Using these websites is like having another teacher in the classroom. Students work together independently.”

Theme 3: Technology integration in the classrooms is challenging. The participants use educational technologies to enhance learning; however, they are faced with challenges when integrating technology in the classrooms. All participants reported that integrating technology in the classrooms is challenging and as a result they need technical support to know how to integrate educational programs in the classroom. The participants lack certain technical skills and need support to improve the use of technology in teaching because technology changes. The participants also need support when the computer programs are not working during their lessons.

For example, the challenges with technology integration in the curriculum to align technology with literacy lessons and to provide hands-on activities in literacy. Another example is literacy projects and presentations challenges when technology is incomparable in the classroom or when they cannot keep up with the changes of technology. The greatest challenge in integrating technology in the curriculum is the need to protect students from engaging in Websites that they should not be able to access.

Educational technologies are used as a tool to enhance learning in a content area; however, teachers face challenges when integrating technology in the classrooms. All participants reported that integrating technology in the classrooms is challenging. P1 stated, “We need technical support with the integration of technology in the classroom.” P2 stated, “I feel I am not fully prepared to keep up with the innovations of technology.” P3 stated, “I need technical support when I lack knowledge of how to integrate educational programs in the classroom.” P4 stated, “I lack certain technical skills when I integrate educational literacy programs in the classroom.” P5 stated, “It is challenging to use technology in the classroom because I am not a computer savvy.” P6 stated, “I need to improve the use of technology in teaching because it always changes.” P7 stated, “I need technical support to access computer educational programs.” P8 stated, “I need technical support when the computer programs are not working during my teaching.” P9 stated, “Integration of technology into the curriculum is challenging when technical problems prevent me from meeting the needs of the students.” P10 stated, “I need to facilitate student learning with today’s technology but I face challenges when integrating technology to teach literacy.” All participants stated that when they are facing challenges in the classroom trying to integrate technology then technology is limited or not used at all. All participants are unable to integrate technology in the classroom when the computer programs are not working. All participants decline the use of computer technology when they cannot successfully operate computer programs in the classroom. All participants stated that their perceptions about the use of technology has not affected the integration of technology in the classroom. Most of the participants said that school

principals are not helping with the challenges of the integration of technology in the classroom because of school budgeting.

P1 stated, “Knowledge of computers and how to operate the program the district uses are challenging.” P2 said, “For technology integration in the curriculum, compatible and working teaching materials are needed.” P3 reported, “The greatest challenge with technology is finding the appropriate time to engage in technology.” P4 said, “Some of my greatest successes with technology integration has been an increase in reading comprehension amongst my students.” P5 reported, “My greatest strengths when using technology is being able to align technology with my literacy lessons and also using technology as a hands-on application in literacy.” P6 stated, “I have come across some really good literacy projects and presentations because of technology. The online writing activities are good because each student is writing their own journal.”

P1 said,

> We need technology that is more dependable. We couldn't keep up with the changes of technology. So, this is a challenge every day to try to keep up with the changes in technology and at the same time inform the students of what has changed.

P2 said,

> The greatest challenge in integrating technology in the curriculum is the need to protect students from engaging in Websites that they should not be able to access. Technology has created a demand for teachers to protect student’s behavior online. Even though the Chromebooks we use are supposed to have blocks,

students can bypass the blocks and get into many unauthorized Websites. This can create risks."

Theme 4: Teachers need professional development on technology integration in the classrooms. The participants use educational technologies to enhance learning in math, literacy, and sciences; however, they need professional development (PD) on how to integrate technology in the classroom. For example, the participants need PD to learn (a) how to successfully use technology in the classroom, (b) how to use math, literacy and science-related computer programs. The participants reported that PD is helping them enhance their technology related skills.

Educational technologies are used to enhance learning in math, literacy, and sciences. Teachers face challenges when integrating technology in the classrooms. All participants reported that they need professional development (PD) on how to integrate technology in the classroom. All participants reported that PD is imperative in education. P1 stated, "We need professional development to know how to successfully use technology in the classroom." P2 stated, "PD helps me to increase knowledge in how to use math programs." P3 stated, "PD is needed to successfully use literacy computer programs." P4 stated, "PD is necessary to use science-related computer programs." P5 stated, "PD is helping me enhance my computer skills."

P6, P7, and P10 reported that PD sessions should focus on best teaching practices with technology integration. P1, P4, and P9 reported that PD sessions should focus on computer-related activities to address the needs of students. P1, P3, P4, P7, and P10

reported that PD sessions should be offered throughout the school year. P1, P2, P6, P8, and P9 reported that they learn from PD how to integrate technology in their classrooms.

All participants said that PD sessions must be aligned with the curriculum. All participants said that district and school administrators could support teachers by offering continues PD sessions regarding best teaching practices. All participants also said that PD on high-quality instruction is necessary. Most participants reported that PD sessions have a positive effect on their teaching. All participants also reported that PD training helps them be more confident in using technology in the classroom.

P2, P3, P5, P6, and P10 reported that PD sessions should focus on the needs of the teachers on how to use technology in the classroom. P2, P4, P6, P9, and P10 reported that teachers need to know how to use technology to prepare students increase proficiency in literacy and numeracy. P1, P4, P5, P7, and P8 reported that PD sessions on how to incorporate educational technology can help them address students' limitations with understanding the math, literacy, and science curricula. All math participants reported that PD training on modern-day technology helps them develop teaching activities that involve constant decision-making processes in algebra. All literacy participants reported that PD training on modern-day technology helps them develop teaching activities that involve monitoring the writing skills of students. All science participants reported that PD training on modern-day technology helps them develop teaching activities that involve data collection and analysis.

P1 reported,

> The need for more professional development! Many times, teachers are not as eager to integrate technology because of the limited knowledge they have regarding technology integration in the curriculum. Not all students have technology at home which puts some students at a disadvantage when assigning tasks that are to be completed at home.
>
> P2 reported, “Knowledge of basic technology is needed. You must become comfortable using technology via professional development before you are able to integrate it into your instruction.” P3 stated, “Overall, I need more training because there's so much that can be done with technology in teaching.” P4 said, “I need professional development to know how to use Math Facts in Chromebooks, iPad, or a laptop.” P5 said, “Not enough training or professional development opportunities are offered.” P6 stated, “Administrators should make sure that teachers have training on how to use technology in the classroom.”

The participants use educational technologies to enhance learning in math, literacy, and sciences. These participants need PD to learn (a) how to successfully use technology in the classroom, (b) how to use math, literacy and science-related computer programs. Educational technologies are used to enhance learning in math, literacy, and sciences. PD sessions on how to integrate technology in the classrooms are needed.

Summary of Themes

The first theme (Table 1) was that technology integration in the classrooms has the potential to improve education for elementary school students. Technology is integrated into the elementary school curriculum and is consider critical to the success of

students. The participants reported that technology integration into the elementary school curriculum is having a positive effect on learning because students learn difficult concepts and construct new knowledge. All participants use programs such as Go Noodle, News Ela, Read Works, Google, and YouTube, Apex or IXL, Google Classroom, Smartboards to help students with inquiry-based learning activities. The participants stated that by integrating educational technologies in the classroom, students were able to understand and apply new knowledge. All participants have been integrating educational technologies in the classroom because students are able to understand and apply new knowledge. Based on the themes (Table 1), technology integration into the elementary school curriculum is: (a) helpful to teach all academic subjects, (b) critical to the success of students, (c) having a positive effect on learning, (d) helping students learn difficult concepts, (e) helping students construct new knowledge, and (f) helping students interpret their learning experiences.

The second theme (Table 1) was that technology integration in the classrooms helps elementary school students to improve their literacy skills. All participants reported that technology integration in the classrooms helps elementary school students to improve their proficiency in literacy. The participants use reading software to facilitate students' learning and PowerPoint Presentations and publisher to create literacy projects. Technology integration into the elementary school curriculum: (a) helps elementary school students to improve their literacy skills, (b) prepares students to be successful in the 21st century, (c) helps students improve state scores in literacy, (d) helps students

improve their literacy skills, (e) prepares students to synthesize when they write stories, (f) prepares students to do better on state tests in literacy.

The third theme (Table 1) was that technology integration in the classrooms is challenging. The participants use educational technologies to enhance learning; however, they are faced with challenges when integrating technology in the classrooms. One challenges with technology integration in the curriculum is to align technology with literacy lessons and to provide hands-on activities in literacy. Educational technologies are used as a tool to enhance learning in a content area; however, teachers face challenges when integrating technology in the classrooms. All participants reported that integrating technology in the classrooms is challenging. Teachers: (a) need technical support with the integration of technology in the classroom, (b) need strategies to integrate educational programs in the classroom, (c) experience technical problems that prevent them from meeting the needs of the students, (d) school principals are not helping teachers with the challenges of the integration of technology in the classroom because of school budgeting.

The fourth theme (Table 1) was that teachers need professional development on technology integration in the classrooms. The participants use educational technologies to enhance learning in math, literacy, and sciences; however, they need professional development (PD) on how to integrate technology in the classroom. For example, the participants need PD to learn (a) how to successfully use technology in the classroom, (b) how to use math, literacy and science-related computer programs. The participants use educational technologies to enhance learning in math, literacy, and sciences. These participants need PD to learn (a) how to successfully use technology in the classroom, (b)

how to use math, literacy and science-related computer programs. Educational technologies are used to enhance learning in math, literacy, and sciences. PD sessions on how to integrate technology in the classrooms are needed. Educational technologies are used to enhance learning in math, literacy, and sciences. All participants reported that they need PD on how to integrate technology in the classroom. PD: (a) is imperative in education, (b) on how to successfully use technology in the classroom is necessary, (c) helps teachers to increase knowledge in how to use educational programs to teach math, literacy, and science-related computer programs.

Table 1

Summary of Themes

#	Theme
1	Technology integration in the classrooms has the potential to improve education for elementary school students.
2	Technology integration in the classrooms helps elementary school students to improve their literacy skills.
3	Technology integration in the classrooms is challenging.
4	Teachers need professional development on technology integration in the classrooms.

Conclusion

Upon IRB approval, I interviewed 10 teachers. I organized the interview transcripts in order to answer the research question, which was about the experiences of teachers regarding the integration of technology in the elementary school classroom. I conducted a line-by-line thematic analysis for emergent themes. Four themes emerged. The first theme was that technology integration in the classrooms has the potential to improve education for elementary school students. The second theme was that technology integration in the classrooms helps elementary school students to improve their literacy skills. The third theme was that technology integration in the classrooms is challenging. The fourth theme was that teachers need professional development on technology integration in the classrooms. In Section 3, a project based on the study findings is presented. Section 4 is a description of reflections and conclusions of this doctoral project study.

Section 3: The Project

Section 1 described the problem and purpose of the project study. The research site was a public elementary school where teachers have been integrating educational technologies in the classroom. The purpose of this project study was to examine the experiences of elementary school teachers regarding educational technologies used in the classroom.

In Section 2, a qualitative research design was used. The conceptual framework was Bruner's theory of instruction, which describes that instruction should increase students' ability to understand, transform, and transfer what they are learning. The research question was about the experiences of teachers regarding the integration of technology in the elementary school classroom. Using a purposive sample, qualitative data were collected through semistructured interviews of 10 regular classroom teachers. Data were analyzed using axial coding and thematic analysis to identify themes. Four themes emerged from the interview data analysis (Table 1).

The first theme describes how technology integration in the classrooms has the potential to improve education for elementary school students to apply new knowledge. Based on theme 1, technology integration into the elementary school curriculum is: (a) helpful to teach all academic subjects, (b) critical to the success of students, (c) having a positive effect on learning, (d) helping students learn difficult concepts, (e) helping students construct new knowledge, and (f) helping students interpret their learning experiences.

The second theme is that technology integration in the classrooms helps elementary school students to improve their literacy skills. Technology integration into the elementary school curriculum: (a) helps elementary school students to improve their literacy skills, (b) prepares students to be successful in the 21st century, (c) helps students improve state scores in literacy, (d) helps students improve their literacy skills, (e) prepares students to synthesize when they write stories, (f) prepares students to do better on state tests in literacy.

The third theme is technology integration in the classrooms is challenging. All participants reported that integrating technology in the classrooms is challenging. Teachers: (a) need technical support with the integration of technology in the classroom, (b) need strategies to integrate educational programs in the classroom, (c) experience technical problems that prevent them from meeting the needs of the students, (d) school principals are not helping teachers with the challenges of the integration of technology in the classroom because of school budgeting.

The fourth theme is teachers need professional development on technology integration in the classrooms. Educational technologies are used to enhance learning in math, literacy, and sciences. All participants reported that they need PD on how to integrate technology in the classroom. PD: (a) is imperative in education, (b) on how to successfully use technology in the classroom is necessary, (c) helps teachers to increase knowledge in how to use educational programs to teach math, literacy, and science-related computer programs. In Section 3, the project goals and rationale are described.

Section 3 includes the identification of needed resources, supports, and anticipated barriers to solutions as well as the proposed implementation timeline.

The Project: Professional Development

The research site was a public elementary school. The participants were teachers who have been integrating educational technologies in the classroom. The purpose of this project study was to examine the experiences of elementary school teachers regarding educational technologies used in the classroom. Qualitative data were collected through semistructured interviews with 10 regular classroom teachers. Data were analyzed using axial coding and thematic analysis to identify emergent themes. Four findings emerged: (a) technology integration in the classrooms has the potential to improve education for elementary school students to apply new knowledge, (b) technology integration in the classrooms helps elementary school students to improve their literacy skills, (c) technology integration in the classrooms is challenging, and (d) teachers need professional development on technology integration in the classrooms.

The participants reported that they need PD on how to integrate technology in the classroom. PD: (a) is imperative in education, (b) on how to successfully use technology in the classroom is necessary, (c) helps teachers to increase knowledge in how to use educational programs to teach math, literacy, and science-related computer programs. Teachers face challenges when integrating technology in the classrooms and need PD supporting how to integrate technology in the classroom. P1 stated, “We need professional development to know how to successfully use technology in the classroom.” P2 stated, “PD helps me to increase knowledge in how to use math programs.” P3 stated,

"PD is needed to successfully use literacy computer programs." P4 stated, "PD is necessary to use science-related computer programs." P5 stated, "PD is helping me enhance my computer skills." P6, P7, and P10 reported that PD sessions should focus on best teaching practices with technology integration. P1, P4, and P9 reported that PD sessions should focus on computer-related activities to address the needs of students. P1, P3, P4, P7, and P10 reported that PD sessions should be offered throughout the school year. P1, P2, P6, P8, and P9 reported that they learn from PD how to integrate technology in their classrooms.

All participants said that PD sessions must be aligned with the curriculum. All participants said that district and school administrators could support teachers by offering continues PD sessions regarding best teaching practices. All participants also said that PD on high-quality instruction is necessary. Most participants reported that PD sessions have a positive effect on their teaching. All participants also reported that PD training helps them be more confident in using technology in the classroom. P2, P3, P5, P6, and P10 reported that PD sessions should focus on the needs of the teachers on how to use technology in the classroom. P2, P4, P6, P9, and P10 reported that teachers need to know how to use technology to prepare students increase proficiency in literacy and numeracy. P1, P4, P5, P7, and P8 reported that PD sessions on how to incorporate educational technology can help them address students' limitations with understanding the math, literacy, and science curricula. All math participants reported that PD training on modern-day technology helps them develop teaching activities that involve constant decision-making processes in algebra. All literacy participants reported that PD training

on modern-day technology helps them develop teaching activities that involve monitoring the writing skills of students. All science participants reported that PD training on modern-day technology helps them develop teaching activities that involve data collection and analysis. PD was chosen as a project in order to address the findings from the participants who reported that they need PD on how to integrate technology in the classroom. PD: (a) is imperative in education, (b) on how to successfully use technology in the classroom is necessary, (c) helps teachers to increase knowledge in how to use educational programs to teach math, literacy, and science-related computer programs.

Project Goals

Based on the themes that teachers need PD sessions, a 3-day PD was created as a supplemental to be offered during a school year to teachers (see Appendix A). The participants integrate technology in the classrooms to help students to improve their proficiency in state tests; however, technology integration in the classrooms is challenging and as a result PD is needed. Specifically, PD on how to successfully integrate technology in the classroom is imperative to help teachers to increase knowledge in how to use educational programs to teach math, literacy, and science-related computer programs.

The goal of the 3-day PD is an intensified support for teachers who face challenges when integrating technology in the classrooms and need PD on how to integrate technology in the classroom. The goals of PD sessions are to: (a) show ways to successfully use technology in the classroom, (b) help teachers to increase knowledge in how to use math, literacy, and science-related educational programs. PD sessions will (a)

focus on best teaching practices with technology integration, (b) focus on computer-related activities to address the needs of students, (c) be available during the school year, (d) be aligned with the math and literacy curriculum, (e) focus on helping students with understanding the math, literacy, and science curricula, and (f) focus on teaching activities that involve constant decision-making processes.

Rationale

PD will help teachers to understand how to integrate technology in the classrooms. The PD plan will consist of 3-day PD based on research findings from this study. PD will also consist of review of evidence-based best teaching practices. The PD plan will be used by target policymakers as well as district leaders in charge of the implementation, monitoring, and accountability of PD programs. Developing, implementing, and evaluating the intensified PD to support teachers could provide school and district administrators with resources for improving proficiency in math, literacy, and sciences at the research site. Administrators may promote the 3-day PD in other school districts.

Project Outline

The 3-day PD will consist of three sessions scheduled over 3 days. The intended target audience for the PD will be teachers. The session will occur in the following sequence:

Session 1: Ways to successfully use technology in the classroom and strategies for teachers to increase knowledge in how to use math, literacy, and science-related educational programs.

Session 2: How to use best teaching practices with technology integration to teach computer-related activities to address the needs of students by focusing on teaching activities that involve constant decision-making processes.

Session 3: How to align the math and literacy curriculum with technology integration to help students understand math, literacy, and science curricula.

Review of the Literature

In this review, literature corresponds to the findings that support teacher quality. I researched evidence-based policies that strengthen teacher quality. I limited my search to peer-reviewed education articles published within the last 5 years. I used the EBSCO, ERIC and SAGE publications databases to collect my literature. I was able to find over 40 articles for this review. The search terms included *technology integration; technology education; educational technology; technology and learning; teaching with technology; technology and student achievement; teachers' perceptions and technology integration; leadership and technology integration; technology integration and barriers.* The literature clearly demonstrates the current state of technology integration in classrooms throughout the United States as reported by educators invested in the American education system.

According to Mata, Lazar, and Lazar (2015), teachers use interactive boards in educational activities. The roles of the teachers are pedagogical, instructional, and technological. Teacher use technology to help students to develop technology skills for meeting college and workplace demands. There is a significant relationship between teacher technology integration and professional development (Holt, 2015). Teachers'

perception of technology is that student engagement increases with the effective use of technology and the teacher's technology integration in the classroom (Holt).

According to Nikolopoulou and Gialamas (2015), teachers' perceptions of barriers to using computers in early childhood settings included inadequate training opportunities Teachers' confidence with technology resulted in higher probability of computer use in class (Nikolopoulou & Gialamas). Another barrier to using computers in the classroom is the lack of additional professional development and support (Rabah, 2015).

According to Preston et al. (2015), perceptions of school leaders pertaining to the benefits and challenges of technology in high schools revealed that technology positively affected student motivation. School leaders recognized the challenges regarding the impact of technology at the high school level. One challenge identified was the decline of literacy skills of high school students (Preston et al.).

Teachers need professional development to promote effective technology integration in the classroom (Er & Kim, 2017). School leaders can help teachers with technology integration (Er & Kim). School leaders can also help teachers with professional development regarding technology integration in the classroom (Er & Kim).

Hsu (2016) used a mixed-methods study to examine the barriers concerning technology integration of K-6 teachers in the midwestern United States. The findings indicated that a majority of the teachers held constructivist pedagogical beliefs about technology integration. Hsu found that the teachers placed positive value on the use of technology. Language arts was the subject that gained the most attention for technology

integration. One barrier was teachers' lack of training in the use of technology (Hsu, 2016).

Liu, Ritzhaupt, Dawson, and Barron (2017) designed and tested a model of classroom technology integration in the context of K-12 schools. Data were collected from 1,235 K-12 teachers who were located in 336 schools in 41 districts across the state of Florida. Liu et al. reported that a teacher's experience with technology significantly influenced his or her classroom technology integration. The availability of quality technology support was related to classroom technology integration (Liu et al.). How frequently a teacher uses technology and his or her confidence and comfort using technology were mediators for classroom technology integration (Liu et al.).

Teachers of literacy may use computer-assisted reading software programs to help students in reading (Al-Seghayer, 2016). Al-Seghayer examined the effectiveness of computers in teaching literacy. Al-Seghayer found that computer-assisted reading software programs can be used to improve the quality of reading instruction and to develop learners' reading skills.

According to Liang (2015), teachers should be required to integrate technology into their teaching. Liang's sample was 303 in-service preschool teachers in Taiwan. Liang used ANOVA analyses. Liang found that teachers need to know how to integrate technology. According to Liang, teachers need technological pedagogical content knowledge. Also, according to Liang, teachers consider the technological related knowledge as having greater importance. Joo, Park, and Lim (2018) used a sample of 296 responses from the College of Education from three Korean universities. Joo et al. (2018)

found that technological pedagogical content knowledge is important to teachers. Teachers who have technological pedagogical content knowledge use technology in the classroom. Teachers reported that technological pedagogical content knowledge positively influenced their perceived usefulness of technology in the classroom.

Technology-related change in teachers' practice is guided by confidence engaging in and beliefs about integration (Howard & Gigliotto, 2016). Howard and Gigliotto examined how teachers experience and take risks in technology integration. The participants were teachers who integrated technology over 3 years in an Australian one-to-one laptop program. Howard and Gigliotto found that teachers who use technology developed coping strategies to support integration. Howard and Gigliotto stated that successful coping strategies resulted in decreased concern about using new technologies in teaching.

Kul and Celik (2018) examined factors affecting mathematics teachers' intentions to integrate Web 2.0 tools in teaching of mathematics. The sample was 32 teachers. Data were collected via semistructured interviews, reflective journals, and field notes. Kul and Celik found that teachers' attitudes influence mathematics teachers' intentions regarding Web 2.0 technology integration. Kul and Celik reported that teachers apply Web 2.0 technologies in mathematics education and need to know how to meaningfully integrate these technologies with mathematics topics. Also, Karademir, Erdoğdu, and Gökçearslan (2017) examined the use of Web 2.0 tools such as Wikipedia, Facebook, and blogs by teachers in the classroom. Quantitative data were collected by interview forms to determine the effect of learning type on technology perception and their choice of peer or

individual learning. The findings indicated a significant difference between pre and post test scores as the score is higher in post-test regarding technology perceptions. The analysis of the interviews show that peer learning promotes computer skills, high level learning skills (Karademir et al.). Alwehaibi (2015) examined the impact of integrating YouTube technology into English as a foreign language instruction. YouTube is a video-sharing website that allows users to upload, view, and share video clips. The sample was elementary school teachers. Statistical procedures were used and the findings included that teachers were successfully integrating video technology in instruction.

Durak and Saritepeci (2017) investigated the effect of technology integration in the classroom. Semistructured interview were used to collect data. The research site was schools that used interactive boards, tablets, and software technologies. The sample was 52 high school teachers. Durak and Saritepeci found that the effect level of technology use by teachers in the classroom was moderate. Teachers used interactive boards as a presentation tool during classes.

Keengwe, Schnellert, and Mills (2012) examined how 1:1 laptop initiative affected student learning at a selected rural Midwestern high school. The sample was 105 high school students. Students' and faculty perceptions of the impact of 1:1 laptop computing on student learning were examined. Keengwe et al. suggested that integration of 1:1 laptop computing positively impacted student academic engagement and student learning. Keengwe et al. concluded that teachers should implement appropriate computing practices to enhance student learning.

Alenezi (2017) examined educational obstacles in using technology in the classrooms. The focus of Alenezi's study was on obstacles of educational technology integration for elementary school education. Alenezi found that the level of comfort to use technology was teachers' obstacle.

Mitchell, Wohleb, and Skinner (2016) determined if teachers' attitudes toward the amount of technology training that the educators had received are affected by specific demographic factors such as educators' access to technology and their use of technology in instruction. Mitchell et al. found that teachers with fewer years of teaching experience utilized technology more than seasoned teachers. Mitchell et al. reported that special education teachers, elective subject teachers, and career and technical education teachers utilized technology less than teachers who taught other subjects. Teachers noted that adequate technology training was being provided on how to use and integrate technology into the curriculum. Ogirima, Emilia, and Juliana (2017) also examined teachers' attitude in the use of assistive technologies in special needs schools. A descriptive survey was employed. Ogirima et al. revealed that teachers have a positive attitude towards the use of assistive technologies. Ogirima et al. recommended that teachers should be trained and re-trained on the use of assistive technology.

Demirbag and Kilinc (2018) examined teachers' resistance to educational technologies. Demirbag and Kilinc examined teachers' willingness to use technology in the classroom. Demirbag and Kilinc found that certain risk perception dimensions were predictors of willingness to use educational technologies. Demirbag and Kilinc suggested enhancement strategies for teachers to use educational technologies.

Duta (2017) explored university students' perceptions of educational platforms as an effective pedagogical tool in the classroom. Duta's sample was 190 students. Surveys were used to examined students' perceptions regarding the importance of educational platforms in Higher Education. Technology and educational platforms are seen to increase learning and collaboration on campuses (Duta).

Villalba, Gonzalez-Rivera, and Diaz-Pulido (2017) examined teachers' difficulties and barriers about integrating technology in the classroom. The participants were 400 high school teachers. Fface-to-face interviews were conducted. Villalba et al. found that training for teachers was needed. Villalba et al. suggested improvement actions to better integrate technology. Carver (2016) examined K-12 teachers' perceptions of the barriers to technology integration. The sample was 68 students enrolled in online classes in the graduate studies in education department of a small private liberal arts institution. Data were collected using an anonymous online survey. Open and axial coding was used to identify themes in barriers in technology use. Availability of technology was most frequently identified as a barrier (Carver).

Arar and Abramovitz (2016) explored teachers' attitudes toward the implementation of new computer technology to improve teaching and learning products at a private Arab school in Israel. Interviews with both teachers and senior management team members were conducted. Arar and Abramovitz reported that teachers tend to have high expectations of the implementation of new computer technology. Arar and Abramovitz also reported that technological change was implemented through a careful process of management planning.

Liu, Xu, and Pnge (2016) examined teachers' use of PowerPoint in teaching. The setting was Chinese Kindergartens. A sample of 62 Kindergarten teachers was used. Liu et al. reported that teachers frequently implemented teaching activities with PowerPoint. Liu et al. reported that teachers' training was important. Keengwe and Onchwari (2009) examined the challenges of effectively integrating technology into the classroom. Teachers reported that technology tools have the potential to help children learn. Teachers used strategies to integrate specific technology tools into their lessons in a manner consistent with constructivist pedagogy. Keengwe and Onchwari suggested that teachers should use a suitable technology integration professional development model in classrooms to support young learners. Chaaban and Ellili-Cherif (2016) examined teachers' perceptions regarding the extent of technology integration into English as a Foreign Language (EFL) classrooms. The setting was Qatari independent schools. A sample of 263 teachers responded to a survey, which investigated obstacles to technology integration. Teachers revealed consistent perceptions about obstacles to technology integration. The extent of technology integration was predicted by technology formal training.

Pittman and Gaines (2015) examined fourth and fifth grade teachers' perceptions regarding the use of technology in a Florida school district. Pittman and Gaines focused on barriers relating to technology use. The strongest barrier to technology integration was a lack of available computers and hardware.

Technology integration into educational settings is a complex process (Gurfidan & Koc, 2016). Gurfidan and Koc attempted to explain teachers' technology integration through support services. The sample was 396 high school teachers. The findings were that support services have direct effect on technology integration. A case study approach was used by Ihmeideh and Al-Maadadi (2018) via interviews and classroom observations regarding teacher's training. Results revealed that training increased teachers' awareness and understanding of the value and applications of technology integration. Ihmeideh and Al-Maadadi suggested training programs for teachers is needed to increase the successful integration of technology in the classroom. Another qualitative study was conducted by Doron and Spektor-Levy (2018) regarding the integration of students' personal laptops in the classroom. Doron and Spektor-Levy interviewed seven teachers in two junior high schools. Doron and Spektor-Levy revealed that teachers need support to better integrate laptops into their teaching practices.

Ersoy and Bozkurt (2015) examined elementary teachers' experiences about using interactive whiteboard in the classroom. Data were collected through semistructured interviews with teachers and analysed through narrative analysis. Ersoy and Bozkurt reported that teachers had challenges of using interactive whiteboard in the classroom. Ersoy and Bozkurt also reported that teachers need professional development to use interactive whiteboard in the classroom.

Merc (2015) investigated how student teachers use technology in their classrooms during practice teaching. A questionnaire was given to 86 student teachers and

semistructured interviews were conducted with 12 teachers. Merc reported that student teachers had insufficient training regarding the use technology in their classrooms.

Project Description

The participants reported that they need PD on how to integrate technology in the classroom. PD: (a) is imperative in education, (b) on how to successfully use technology in the classroom is necessary, (c) helps teachers to increase knowledge in how to use educational programs to teach math, literacy, and science-related computer programs. A the 3-day PD was created as a supplemental to be offered during a school year to teachers (Appendix A). The goal of the 3-day PD is an intensified support for teachers who face challenges when integrating technology in the classrooms and need PD on how to integrate technology in the classroom. The goals of PD sessions are to: (a) show ways to successfully use technology in the classroom, (b) help teachers to increase knowledge in how to use math, literacy, and science-related educational programs. PD sessions will (a) focus on best teaching practices with technology integration, (b) focus on computer-related activities to address the needs of students, (c) be available during the school year, (d) be aligned with the math and literacy curriculum, (e) focus on helping students with understanding the math, literacy, and science curricula, and (f) focus on teaching activities that involve constant decision-making processes.

The PD plan will consist of 3 days of discussions based on research findings from this study. PD will also consist of review of evidence-based best teaching practices. The PD plan will be used by target policymakers as well as district leaders in charge of the implementation, monitoring, and accountability of PD programs.

The PD will consist of three sessions scheduled over 3 days. The intended target audience for the PD will be teachers. Session 1 will be about ways to successfully use technology in the classroom and strategies for teachers to increase knowledge in how to use math, literacy, and science-related educational programs. Session 2 will be how to use best teaching practices with technology integration to teach computer-related activities to address the needs of students by focusing on teaching activities that involve constant decision-making processes. Session 3 will be how to align the math and literacy curriculum with technology integration to help students understand math, literacy, and science curricula.

Project Resources and Existing Supports

The resources required to conduct PD include a collaborative effort from all stakeholders to engage in discussion and planning. Time is the most precious resource and a potential barrier in regards to teachers participating in the PD sessions. Teachers will have to commit to 3 days of PD. Materials that will be needed during the PD are equipment for display of PowerPoint Presentations, chart paper, markers, and handouts. Funding is needed to support the PD sessions. With limited budgets in the school district, senior administrators will be contacted for support to secure the PD sessions.

Potential Barriers and Solutions

A potential barrier could be the process to schedule training for teachers. With limited budgets in the school district, a barrier is the need for funding to offer the PD training. A potential solution would be to request funding from the education department or to apply for a federal government grant.

Project Implementation and Timetable

The PD will consist of three sessions. Each session will be one day between 9:00am and 3:00pm. The intended target audience for the PD will be teachers. The session will occur in the following sequence:

Session 1: Ways to successfully use technology in the classroom and strategies for teachers to increase knowledge in how to use math, literacy, and science-related educational programs.

Session 2: How to use best teaching practices with technology integration to teach computer-related activities to address the needs of students by focusing on teaching activities that involve constant decision-making processes.

Session 3: How to align the math and literacy curriculum with technology integration to help students understand math, literacy, and science curricula.

Ongoing PD implementation will occur in the schools with meetings for monitoring and evaluation and monthly meetings to engage staff in continued training, coaching, and support. The project will be implemented over a course of 3 years, based on action plans created by each of the participating schools and will be evaluated annually by the core team of principals, lead teachers, technology coaches.

Roles and Responsibilities

The roles and responsibilities of each stakeholder participant are as follows: Teachers who integrate technology into the curricula will meet to discuss the research findings of this study. The support these teachers will need will be demonstrated by the aforementioned PD sessions to prepare them for successful integration of new

educational technologies into the math, literacy, and science curricula. School principals will support these teachers with needed technological resources. The responsibility of the researcher will be to meet with senior district administrators to present the findings of this study and to ask for permission to schedule and facilitate the PD training. The responsibility of the researcher will also be to schedule the PD dates, gather materials, and book the conference room. The researcher will provide the content curriculum needed to facilitate each PD training session.

Project Evaluation Plan

The PD project will be evaluated yearly by the researcher. Outcome-based evaluation will be used to measure the impact of PD project implementation by monitoring the deliverables. Short term and long-term PD goals will be evaluated by the researcher. School and district leaders will use the logic models from the PD to track and monitor the implementation and progress of the PD goals. Summative evaluations will be used to evaluate this project. Project evaluation is need to assess the weaknesses and strengths of the PD program. The feedback from the teachers will assist in making necessary adjustments to the PD project. Participants will complete evaluation forms at the close of each PD session. Feedback from the PD evaluations will be shared with school and district leaders.

Project Implications

Elementary school teachers will benefit from the 3-day PD sessions because they will learn ways to successfully use technology in the classroom and strategies that will help them increase their knowledge in how to use math, literacy, and science-related

educational programs. These teachers will benefit from the hands-on activities during the 3-day PD sessions because they will learn about best teaching practices with technology integration to teach computer-related activities to address the needs of students by focusing on teaching activities that involve constant decision-making processes. Finally, these teachers will benefit from the findings by knowing how to align the math and literacy curriculum with technology integration to help their students understand math, literacy, and science curricula.

The findings should be used by curriculum developers and school and district administrators for decision-making processes to support these teachers with the integration of technology into the curricula. The finding of this study should encourage school and district administrators to offer more PD opportunities for teachers to successfully integrate technology into the curricula to better prepare students to pass state tests and to be successful member of society.

As a solution to the research problem, this project was developed to meet the needs of elementary school teachers to enhance academic success at the study site. The findings of this project study have implications for positive social change because these teachers will learn how to successfully integrate technology into the curricula to better prepare students to pass state tests and graduate from school. This project has also implications for social change due to the impact and benefits for elementary school teachers, school and district administrators, and students. The long-term gains from this project include raising students' proficiency in mathematics, literacy, and sciences.

Conclusion

A 3-day PD was developed based on findings of this project study. A description of the project and its goals, rationale, and evaluation plans were presented in this section. In Section 4, the project's strengths and limitation, as well as alternative considerations, are presented. Section 4 will close with reflections on scholarship, project development and evaluation, and leadership and change.

Section 4: Reflections and Conclusions

Section 4 provides a review of this study. The project's strengths, limitations, and recommendations for further research are presented. The findings have provided a guide for a 3-day PD that could be implemented as a solution to the research problem. The findings of this project study will help teachers to learn how to successfully integrate technology into the curricula to better prepare students to pass state tests and graduate from school. The gains from this project include raising students' proficiency in mathematics, literacy, and sciences.

Project Strengths and Limitations

At a public elementary school, teachers have been integrating educational technologies in the classroom. The purpose of this project study was to examine the experiences of elementary school teachers regarding the integration of educational technologies into the curricula. Findings from this study provide a guide for the school and district administrators based on first-hand accounts of the lived experiences of elementary school teachers regarding the integration of educational technologies into the curricula. The recommendations for the 3-day PD for elementary school teachers regarding educational technologies used in the classroom are based on the themes from the research question (Table 1). The first theme was that technology integration in the classrooms has the potential to improve education for elementary school students. The second theme was that technology integration in the classrooms helps elementary school students to improve their literacy skills. The third theme was that technology integration

in the classrooms is challenging. The fourth theme was that teachers need professional development on technology integration in the classrooms.

The project deliverable, a 3-day PD, builds on the local school district's vision and mission to support all students graduate from school. Elementary school teachers who will attend the PD will learn ways to successfully use technology in the classroom and strategies that will help them increase their knowledge in how to use math, literacy, and science-related educational programs. Teachers will apply knowledge during the 3-day PD sessions to learn about best teaching practices with technology integration and ways to align the math and literacy curricula.

As a solution to the research problem, this project was developed to meet the needs of elementary school teachers to enhance academic success at the study site. The project is a PD program designed to improve the overall quality of learning and teaching at the study site. The PD project was also designed based on research that promotes the PD for teachers. The intensified support for elementary school teachers who will attend the PD to learn ways to successfully integrate technology into the curricula is limited to one public elementary school within a school district. The intensified support for elementary school teachers is also limited to a small sample of public school teachers.

Recommendations for Alternative Approaches

The project deliverable is a 3-day PD for elementary school teachers to learn ways to successfully integrate technology into the curricula. The 3-day PD is the project. The focus of the 3-day PD is to advocate for elementary school teachers to learn ways to integrate technology into the curricula can ensure that schools use human and capital

resources to target interventions for students. School and district administrators may examine how teachers are trained and prepared to address the needs of students.

An alternative approach would be for elementary school teachers to learn ways to successfully integrate technology into the curricula by having monthly meetings to discuss experiences with technology to help students increase their proficiency in mathematics, literacy, and sciences. Another alternative would be for teachers to mentor each other to share teaching strategies, observe one another, and provide feedback to each other as peers.

Scholarship and Project Development and Evaluation

My personal experience conducting this study involved an understanding of the experience of elementary school teachers who integrate technology into the curricula. I gained valuable insight to research that can be used in my professional role as a practitioner. The project study findings will be of use to the local school district. I have learned how to collect and organize interview data. I have also learned how to analyze data for emergent themes.

Summative evaluations will be used to evaluate this 3-day PD project. Project evaluation is needed to assess the weaknesses and strengths of the PD program. The feedback from the elementary school teachers, school and district administrators, and curriculum developers will assist in making necessary adjustments to the PD content. Elementary school teachers who will participate in the 3-day PD will complete evaluation forms at the end of each PD session. Feedback from the PD evaluations will be shared

with elementary school teachers, school and district administrators, and curriculum developers.

Leadership and Change

I have been teaching for more than 30 years. My passion is the academic success of students. As an elementary school teacher, my passion is to learn new and effective ways to successfully integrate technology into the curricula. Based on the findings of this project study, I will be having monthly meetings with colleagues and administrators to discuss experiences with technology to help students increase their proficiency in mathematics, literacy, and sciences. Based on the findings and my teaching experiences, I will mentor colleagues to share strategies to successfully integrate technology into the curricula. I will be making meaningful changes to the teachers' strategies to integrate technology into the curricula. Thus, I aim to use the findings of this project to make change to the local school district. As a researcher and an educator, I have a clear vision of how to apply the 3-day PD to local educational settings.

Reflection on the Importance of the Work

This doctoral journey has been very rewarding! This journey has a positive effect on my career. I felt I was pushed beyond my limits as a novice scholar. I learned how to collect, code, and analyze interview data. I know how to find solutions to research problems. Developing the 3-day PD project took a substantial amount of planning and time. This doctoral project study is confirmation of my experience as a project developer. Thus, with patience, hard work, diligence, persistence, and scholarship, my dream of earing an EdD degree is within reach.

Implications, Applications, and Directions for Future Research

I conducted a qualitative case study. I interviewed a small sample of elementary school teachers. To replicate this study, a sample of school and district administrators from the same study site could be used. Also, teachers from more than one school should be used as participants.

A quantitative study could be piloted to observe the effect of the 3-day PD by comparing state scores before and after the implementation of the PD. A mixed-methods research design could also be conducted to examine the effect of the 3-day PD on standardized state test scores and to interview school administrators and curriculum developers. Recommendations for future research could include the comparison of PD programs offered by private urban or rural schools or alternative schools. Recommendations for further research can also include evaluation of action plans and multitiered supports for teachers to integrate technology in their classrooms.

Conclusion

Elementary school teachers and school and district administrators will benefit from the findings of this project study to help students to pass standardized tests. The project will support teachers to better help students to improve their proficiency in mathematics, literacy, and sciences. The project has a potential impact on local social change because students may improve their proficiency in mathematics, literacy, and sciences and graduate from school. The PD project is intended to share the findings and to create an action plan for the school district to address specific areas of concern. The

PD training offered to elementary school teachers can show positive results in other school districts.

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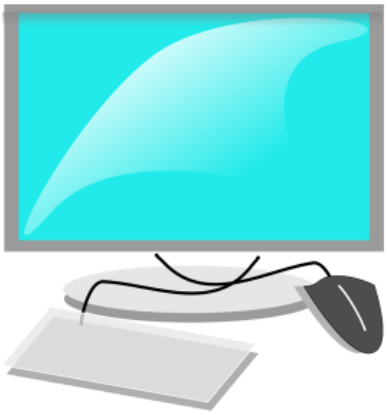
Appendix A: The Project

3-day Professional Development for Teachers on Technology Integration in the Classrooms

by

Barbara Ann Jones



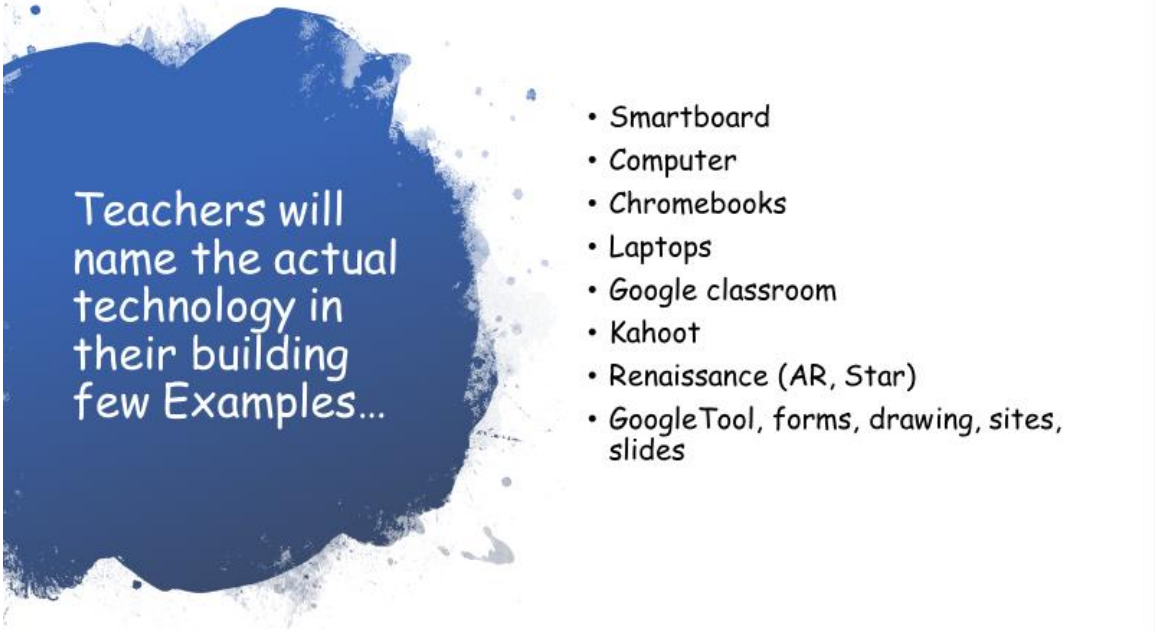
3Day Training on Integrating Technology into the Curriculum

Presenter: Barbara Jones
Doctoral Student
Walden University

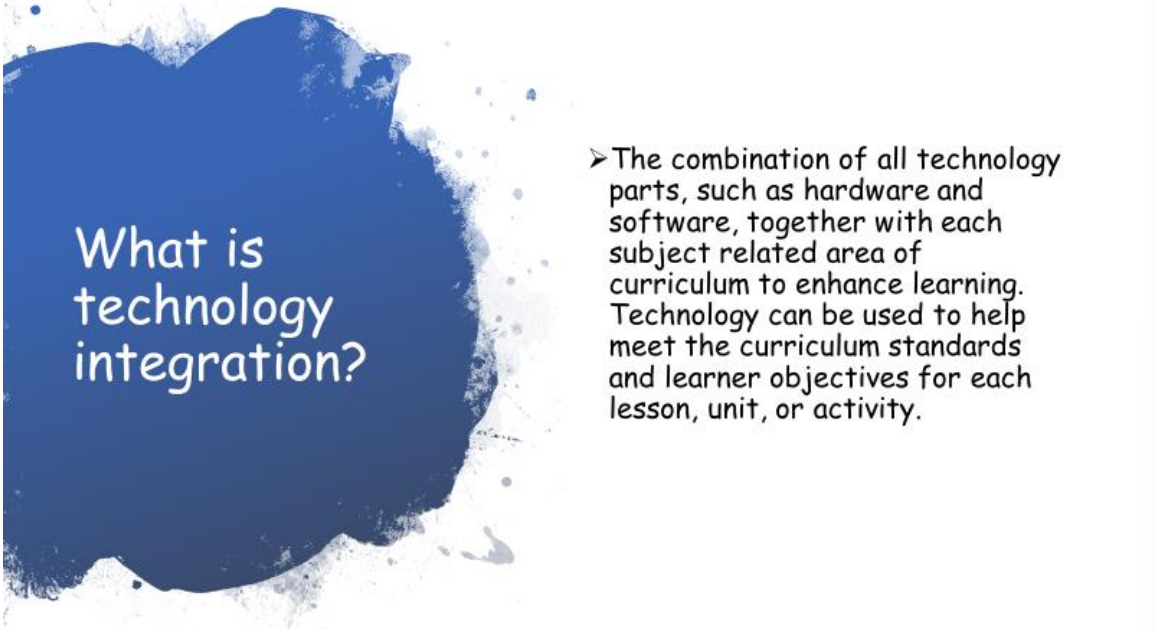
Agenda for the 3Days Technology PD

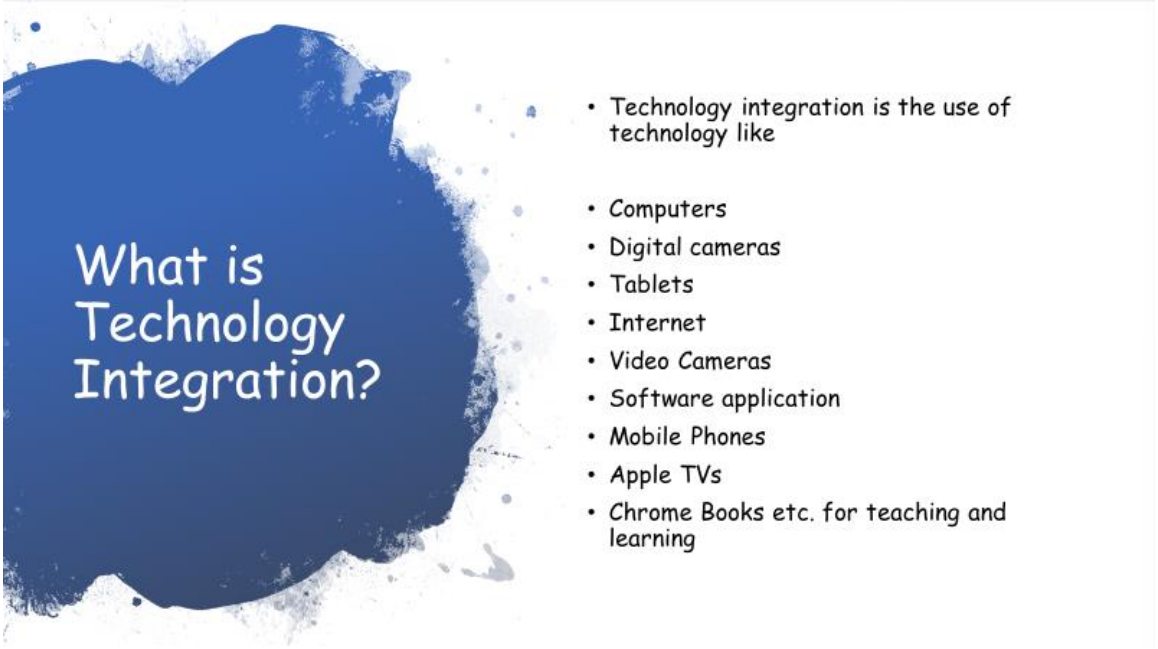
- Introduction-Ice Breaker-Getting to know your Audience
- Goals of the Workshop
  - To ensure teachers know the technology in their building
  - To ensure teachers are utilizing the technology in their building
  - To help teachers integrate technology into their daily lessons
  - To ensure teachers are comfortable using and integrating technology
  - To foster teacher success will ensure students success in all discipline
- Day 1 Ways to successfully use technology
  - What are ways you have utilized technology in your classroom?
  - What is technology integration?
  - What are ways we can use and improve on using technology in the classroom?


Ways to Successfully Use Technology
Day 1
➢Welcome/Sign In……
➢Ice Breaker…… Presenter Barbara Jones
➢Getting to know the audience
➢Discuss and learn ways to successfully use technology


Teachers will name the actual technology in their building few Examples…
• Smartboard
• Computer
• Chromebooks
• Laptops
• Google classroom
• Kahoot
• Renaissance (AR, Star)
• GoogleTool, forms, drawing, sites, slides


Teachers Share ways they utilized the Technology in their Classrooms
• Presenting Lessons
• Showing PowerPoint
• Showing video
• Students playing games(Academic) on computers
• Students working in groups on computers

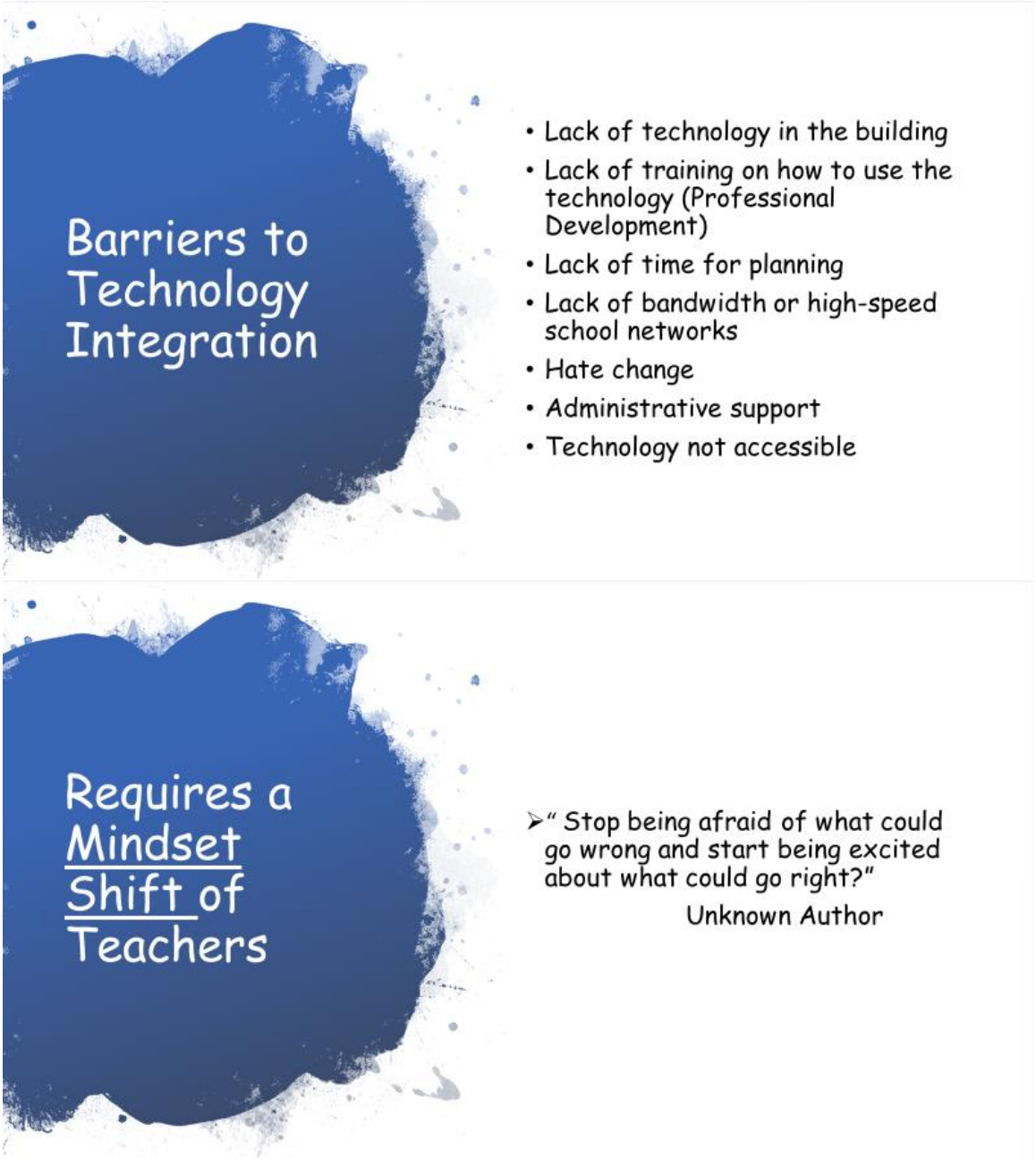

What is technology integration?
➢ The combination of all technology parts, such as hardware and software, together with each subject related area of curriculum to enhance learning. Technology can be used to help meet the curriculum standards and learner objectives for each lesson, unit, or activity.


What is Technology Integration?
• Technology integration is the use of technology like
• Computers
• Digital cameras
• Tablets
• Internet
• Video Cameras
• Software application
• Mobile Phones
• Apple TVs
• Chrome Books etc. for teaching and learning

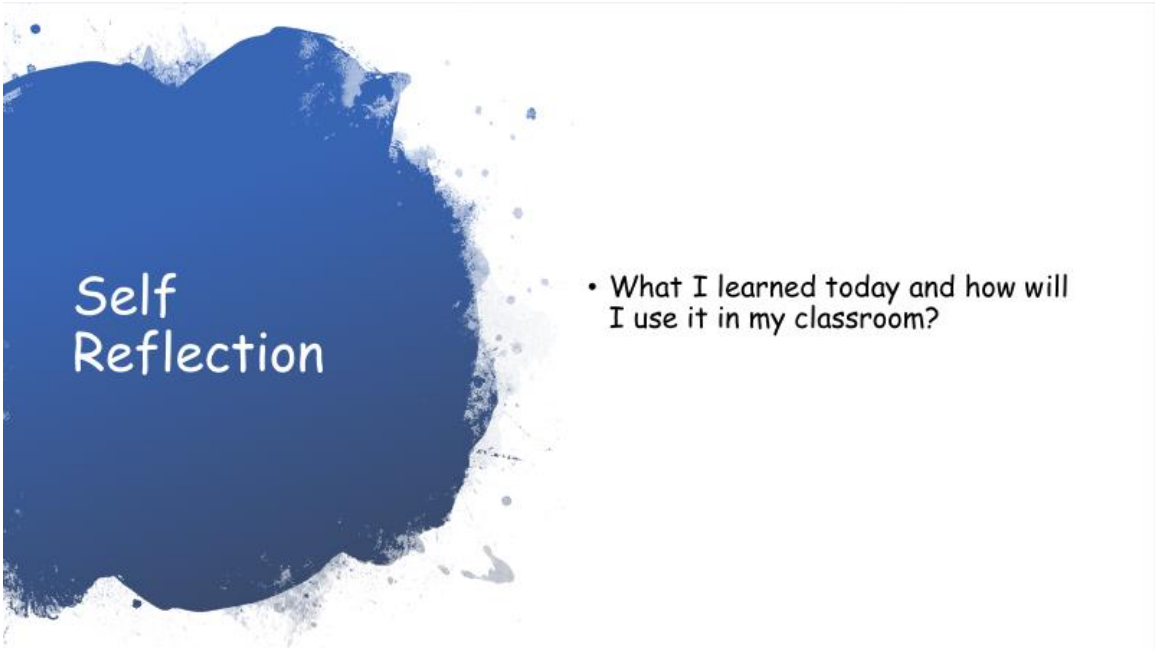

Why Use Technology in the Curriculum
• Motivate Students
• Provide students with unique applications
• New Approaches
• More Production


Integrating Technology Into the Curriculum
Advantages
• Makes learning fun
• Motivates the students and Teachers
• Change in pattern
• Helps with critical thinking
Disadvantages
• Rapidly changing
• Can be costly
• Lack of technology skills


Keys to Successful Technology Integration
• Identify what you are trying to teach in the curriculum
• Look at the standards and learning objectives
• Select the appropriate technology tool that will help you teach the concepts
• Prepare to plan because it takes time


Barriers to Technology Integration
• Lack of technology in the building
• Lack of training on how to use the technology (Professional Development)
• Lack of time for planning
• Lack of bandwidth or high-speed school networks
• Hate change
• Administrative support
• Technology not accessible
Requires a Mindset Shift of Teachers
➢" Stop being afraid of what could go wrong and start being excited about what could go right?"
Unknown Author


What We've Learned/What didn't work
Teacher Responsibility– Picture of computers
Assume nothing!
Kids know too much & teachers don't know enough


Self Reflection
• What I learned today and how will I use it in my classroom?

Best Teaching Practices With Technology Integration

Day 2 of Workshop

- Sign In……Teachers
- Presenter……Barbara Jones
- Present and discuss research-based strategies that work

Review learning from Day 1,

Watch a video on Technology Integration

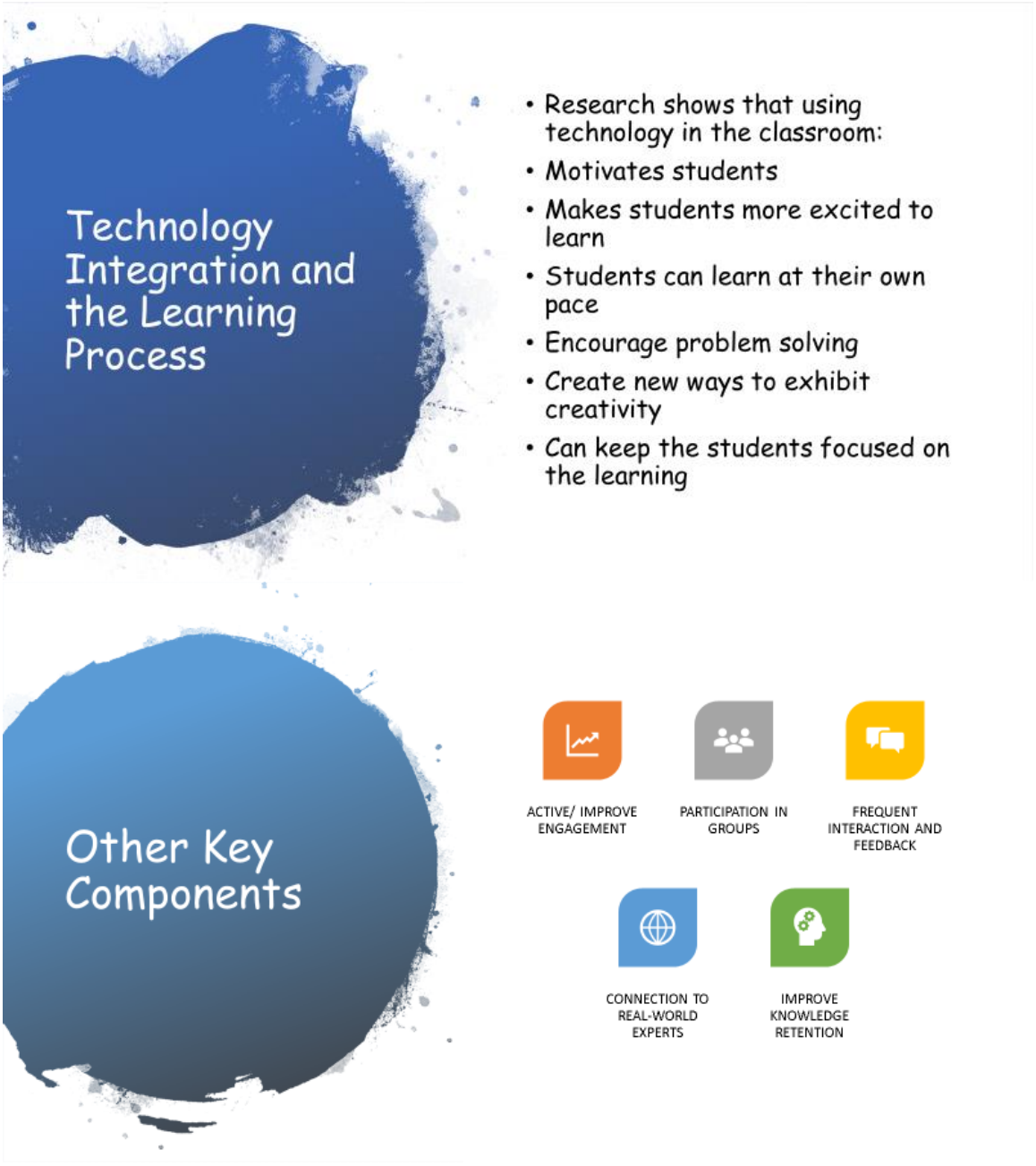
Teachers will work in groups and develop a technology-based lesson in their discipline.

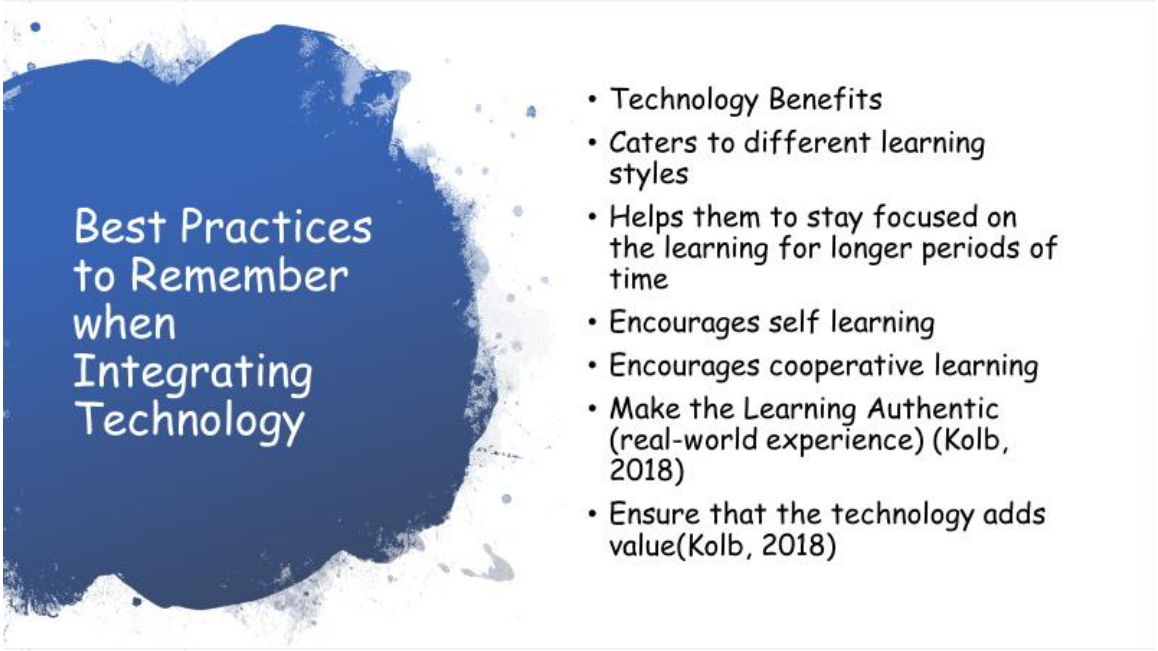
Teachers/group will share an overview of the created lesson.

An Introduction to Technology Integration

YouTube

An Introduction to Technology Integration integrating technology with classroom practice can be a great way to strengthen engagement by linking students to a global audience, turning them into creators of digital media, and helping them practice collaboration skills that will prepare them for the future (Edutopia, 2012).


Technology Integration and the Learning Process
• Research shows that using technology in the classroom:
• Motivates students
• Makes students more excited to learn
• Students can learn at their own pace
• Encourage problem solving
• Create new ways to exhibit creativity
• Can keep the students focused on the learning
Other Key Components
ACTIVE/ IMPROVE ENGAGEMENT
PARTICIPATION IN GROUPS
FREQUENT INTERACTION AND FEEDBACK
CONNECTION TO REAL-WORLD EXPERTS
IMPROVE KNOWLEDGE RETENTION


Best Practices to Remember when Integrating Technology
• Technology Benefits
• Caters to different learning styles
• Helps them to stay focused on the learning for longer periods of time
• Encourages self learning
• Encourages cooperative learning
• Make the Learning Authentic (real-world experience) (Kolb, 2018)
• Ensure that the technology adds value(Kolb, 2018)


Enhancing Education Through Technology U.S. Department of Education
• SEC. 2402. PURPOSES AND GOALS.
• (a) PURPOSES- The purposes of this part are the following:
• (1) To provide assistance to States and localities for the implementation and support of a comprehensive system that effectively uses technology in elementary schools and secondary schools to improve student academic achievement.
• (2) To encourage the establishment or expansion of initiatives, including initiatives involving public-private partnerships, designed to increase access to technology, particularly in schools served by high-need local educational agencies.
• (3) To assist States and localities in the acquisition, development, interconnection, implementation, improvement, and maintenance of an effective educational technology infrastructure in a manner that expands access to technology for students (particularly for disadvantaged students) and teachers.
• (4) To promote initiatives that provide school teachers, principals, and administrators with the capacity to integrate technology effectively into curricula and instruction that are aligned with challenging State academic content and student academic achievement standards, through such means as high-quality professional development programs.
• (5) To enhance the ongoing professional development of teachers, principals, and administrators by providing constant access to training and updated research in teaching and learning through electronic means (Education, 2004).

Several Best Practices

- 1. SEEK STUDENT INPUT IN TECHNOLOGY DECISION-MAKING.

A school can surveys students, staff members and parents every two years to determine what's working and what needs to be improved (Wong, 2011).

- For example, four years ago, the IT staff learned from their survey that they needed to upgrade the network because it was taking too long for students to log in. They resolved the issue by installing new equipment (Wong, 2011).

Best Practice Cont.

- 2. IMPLEMENT TECHNOLOGY IN PHASES.
- An implentation plan for adding technology can eases the budgetary pain and gives districts more time for adequate professional development. After all, teachers must be trained to not only use the technology and become comfortable with it, but also to integrate the tools into their curriculum (Wong, 2011).

Best Practices Cont.

- 3. EXPERIMENT WITH NEW APPROACHES TO USING TECHNOLOGY IN THE CLASSROOM.
- Leaders must create an environment in which teachers can experiment, says Billie McConnell, assistant professor of teacher education and director of the K-12 Digital Learning Institute at Abilene Christian University in Texas. (Wong, 2011)."

Best Practices Cont.

- 4. OFFER IMMEDIATE PROFESSIONAL DEVELOPMENT.
- "If a teacher needs to know how to record a lesson on an interactive whiteboard for the next day or even the next period, a facilitator can provide training immediately," she explains (Wong, 2011).

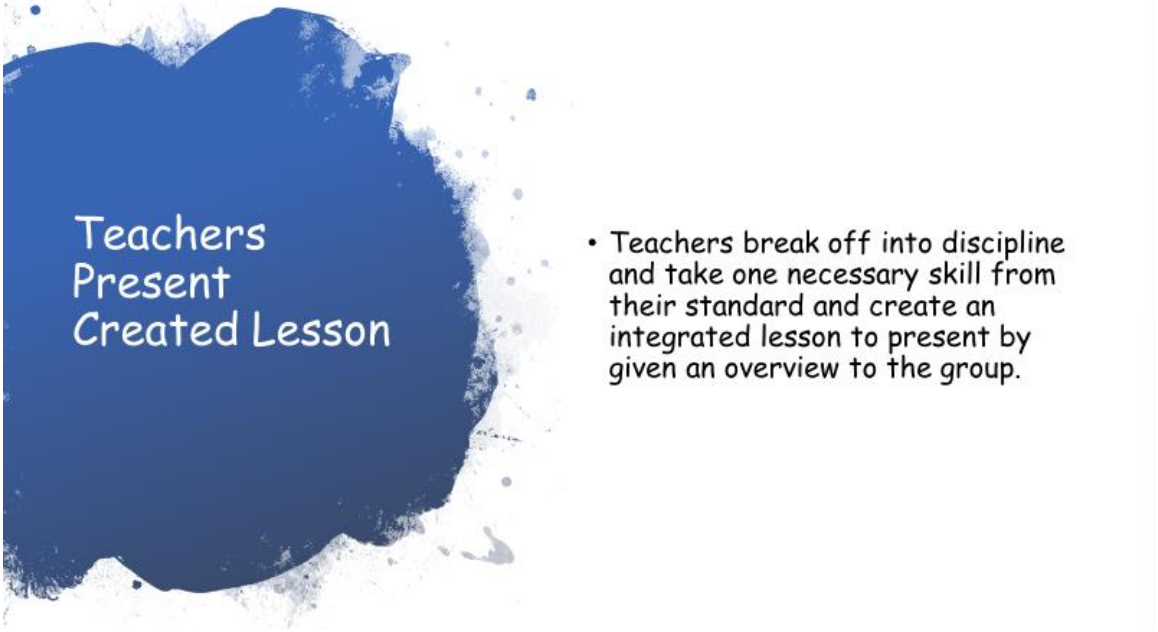
Best practices

- Technology integration is practiced by student teachers in the elementary classrooms with a goal of improving instruction (Lin, 2016).

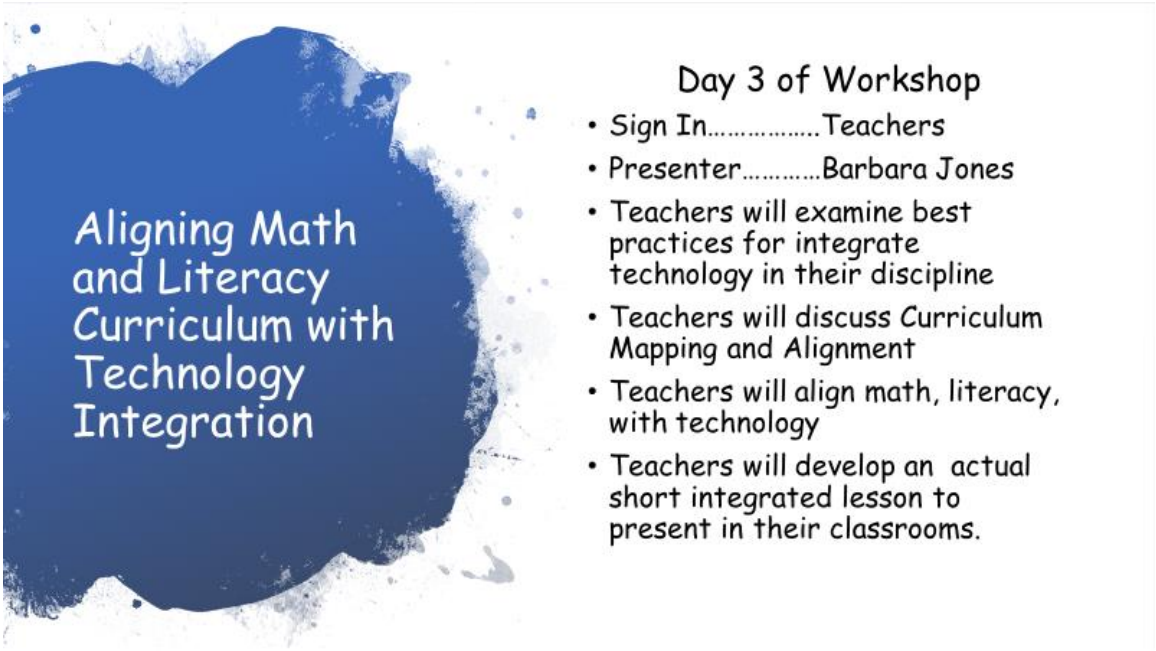
Several Tech. Resources that can be Useful

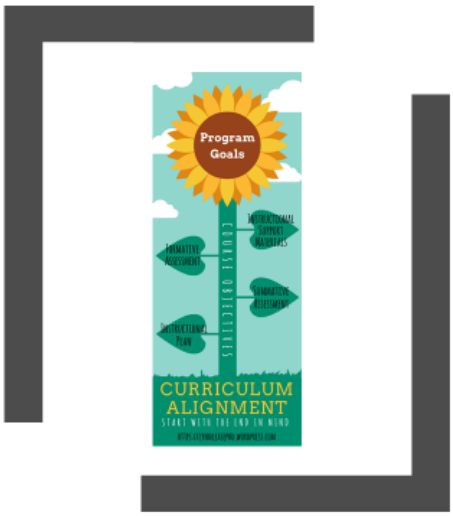
- Minecraft (Engage your students in an immersive world that promotes creativity, collaboration, and problem-solving)
- MakeCode (Bring computer science to life with fun projects)
- Hacking Stem (project-based activities that let students experiment and visualize data across STEM subjects)
- Grammar Bytes!
- Math Aids.Com
- Crash Course.com
- Edit Dan's Copy
- Book Adventure
- Vocabulary.com


Resources Continue
• Animoto
• Khan Academy
• HELIOS (Research Powerpoint)
• Poetry4kids.com
• Puzzle Maker
• Gooru Learning
• BrainPop.com
These sites can be very useful and can be incorporated into your lessons with proper planning and curriculum aligning. These are just a few sites that I am familiar with. There are many more....


Teachers Present Created Lesson
• Teachers break off into discipline and take one necessary skill from their standard and create an integrated lesson to present by given an overview to the group.

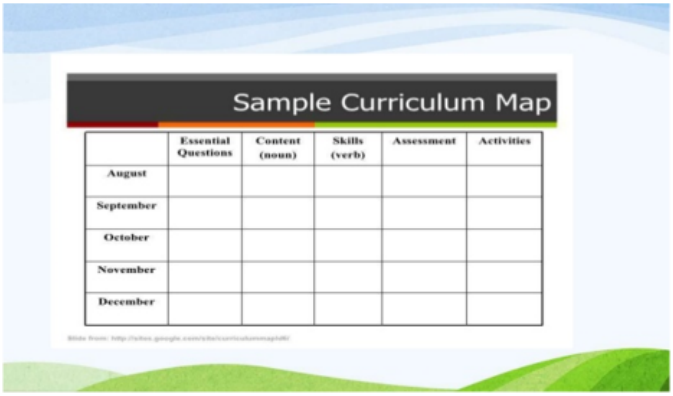

Self Reflection
What I learned today and how will I use it in my classroom?


Aligning Math and Literacy Curriculum with Technology Integration
Day 3 of Workshop
• Sign In……Teachers
• Presenter……Barbara Jones
• Teachers will examine best practices for integrate technology in their discipline
• Teachers will discuss Curriculum Mapping and Alignment
• Teachers will align math, literacy, with technology
• Teachers will develop an actual short integrated lesson to present in their classrooms.



Steps to Curriculum Alignment

- *IDENTIFY PROGRAM GOALS*
- *IDENTIFY COURSE LEARNING OBJECTIVES*
- *PREPARE INSTRUCTIONAL SUPPORT MATERIALS*
- *PLAN FOR FORMATIVE COURSE ASSESSMENT*
- *PLAN FOR SUMMATIVE COURSE ASSESSMENT* (Wiggins, G. & McTighe, 2005)



Strategies for Aligning Technology with Curriculum

- Devices such as tablets and laptops are an everyday part of classrooms. Teachers are working with a generation that lives and breathes technology and many are using technology to enhance learning (Alexander, 2018).
- See Where Current Pedagogy is Coming Up Short
- Use Technology to Track Progress and Differentiate Learning
- Incorporate Real-World Problem Solving
- See How Others Have Done It
- Create Student Portals

Some ideas…Making Learning Fun

- Instead of writing comments in the margins of students' papers, you can have students can send papers via Google classroom and makes comments on the papers.
- You may already know how to create links to Web sites in PowerPoint, but you can also easily create links to the *files* from within a PowerPoint presentation.

Teachers Work on Lessons

- Using their individual standards teachers will create a finish product to use in their classroom with their students. Walk around and monitor and assist as teachers need help!!!!

Evaluation

- Provide teachers with an evaluation piece to gain feedback on what was good and what needs improvement.

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Q & A

Thank You!

Appendix B: Interview Protocol

1. What kind of technology do you use in the classroom, such as computers, iPads, phones, videos, email, text, social media, other?
2. What educational technologies are you using in the classroom?
3. How do you use technology in the classroom?
4. How do you integrate technology into the curriculum?
5. What are some of your greatest successes with technology integration into the curriculum?
6. Describe some not so successful attempts in integrating technology into the curriculum.
7. What specific teaching strategies do you use to integrate technology into the curriculum?
8. What resources are needed with technology integration into the curriculum?
9. What do you feel is your greatest challenge with technology integration into the curriculum?
10. What is your perception of the impact the integration of technology into the curriculum has on student achievement?
11. What else would you like to tell me regarding the integration of technology into the curriculum?