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Teacher Experiences with Technology Use After the Pandemic

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This is to certify that the doctoral study by

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Abstract

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Submitted in Partial Fulfillment

of the Requirements for the Degree of

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COVID-19 caused a worldwide education crisis. Schools were forced to close, teachers and parents had little time to prepare, and students were required to learn from home. The purpose of this study was to explore teachers' perceptions of usefulness and ease of use in adopting technology in response to the COVID-19 pandemic and what support or resources teachers need to be successful when using the technology in their classrooms post-pandemic. The theoretical framework for this project research consists of the technology acceptance model (TAM) to examine teachers' experiences regarding their use of technology in their classroom post the COVID-19 pandemic. The key research questions were centered on teachers' perceptions of technology usefulness and ease of use in their classrooms, teachers' intention to use technology post-pandemic, and resources or support teachers need to use technology successfully in their classrooms. A qualitative study was utilized to identify research questions through individual interviews. The interviews consisted of open-ended questions where 10 teachers expressed their own experiences during their time teaching with technology during and after the pandemic. coding was initiated to analyze information and diagnose themes. Results showed that the technology provided by the district was useful and provided engagement and communication with students and families. Additionally the results showed the need for more professional development, "in the moment" technology support and more time and collaboration. A professional development opportunity for school and district administrators was created based on the conclusions of this study. Doing so can help teachers decipher how to better implement technology in their classrooms to insist that they are meeting the needs of all students in their educational environment, creating positive social change.

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Table of Contents

Section 1: The Problem

The Local problem

Elementary teachers in a local school district, located in an urban northeastern state, are experiencing barriers when it comes to using technology. This is supported below in several personal communications. Teachers were unexpectedly forced to adapt to the use of new technology due to the worldwide COVID-19 pandemic. Teachers had to switch to online learning overnight, and they had to teach their students how to be online learners while teaching behind a screen (Teacher 1, personal communication, April 6, 2020). It is unclear how they perceive technology usefulness and ease of use, what resources teachers need to adopt technology, and how they will use the technology post-pandemic. The problem is that it is unclear what are teachers' perceptions post-pandemic of technology usefulness, ease of use, and support/resources needed.

Although teachers in the district are required to use technology in every lesson, teachers also used other resources and manipulatives provided to them in the classroom. When the pandemic hit, all of those classroom resources and manipulatives were taken away in an instant. Teachers were left with only their Apple MacBooks and iPads and forced to figure out how to use Zoom. While some teachers are comfortable enough using technology every day, a lack of resources may impede teachers' ability to do so. One elementary teacher said, "I received a brand-new MacBook and iPad from the district without training, and I am currently overwhelmed trying to learn how to use my new technology and teach using Zoom, not to mention trying to teach my students how to use their iPad and Zoom" (Teacher 2, personal communication, September 17, 2020). Another teacher said, "I now have to figure out how to create lessons for students only using the internet and their iPad" (Teacher 3, personal

communication, October 7, 2021). An elementary school principal in the district said, “The ability to access professional learning on the use of technology is limited by time and our teachers are struggling” (Teacher 4, personal communication, September 23, 2020). The human resources director of a Pennsylvania school district said that she is experiencing more teachers leaving the profession than ever before, and she is concerned about the teacher and substitute shortage and how it is being worsened by the COVID-19 pandemic (Administration 1, personal communication, January 4, 2022).

The outbreak of the global coronavirus first began in December 2019, but it wasn’t until March 2020 that the World Health Organization (WHO) announced COVID-19 as a global pandemic (WHO, 2020). The coronavirus became a major concern locally and in the field of education. COVID-19 has caused a worldwide unprecedented educational crisis. Instruction was switched from in person learning to blended learning without warning for teachers and therefore-teaching and learning changed. Teachers and students were not prepared for virtual learning which left all educational staff unprepared (Koenig, 2020). Months into the pandemic, teachers, and students were still struggling with basic technology skills (Garcia, 2020).

At the beginning of the pandemic, most all teachers in the United States began using Zoom, to meet with their students and provide lessons to those on their roster (Cruz, 2020a; Turner et al., 2020). Zoom provided an opportunity for teachers to create digital learning experiences that will continue with educators in school years to come. For students with higher needs, teachers had to prepare paper packets for students who had difficulties accessing the online learning platform (Cruz, 2020a, 2020b; Tremmel et al., 2020; Turner et al., 2020). Superintendent had to collaborate with administrators and brainstorm what this may look like with current resources, teacher expectations, support, and long-term planning (Superintendent,

personal communication, March 22, 2020). It took teachers some time to adjust to this new way of teaching. There were many stakeholders involved in finding the best way to educate students during the pandemic.

Rationale

Teachers around the world have expressed great concern about being prepared and having the resources to effectively teach students behind a screen as opposed to face-to-face. School districts from all over the world had to revert to different learning management systems and platforms, including Schoology, which has replaced face-to-face learning (Alrefaie et al., 2020). The use of technology takes time and teachers need that time to adopt it. It is critical to gauge a pulse on teachers' readiness, and how they behave and perceive technology. The superintendent recently hired two technology integrators to assist the school district with upcoming technology issues (Superintendent, personal communication, May 4, 2020). This is a problem that the current school district is struggling with. The problem is that it is currently unknown what teachers' perceptions are regarding the use of technology, ease of use, and support/resources needed post-pandemic. In order to support their current use of technology, this information would be very helpful in guiding administrative efforts.

One way to increase student academic achievement is to integrate technology into classrooms. This has been happening for the past three decades (Sangani, 2014). Teachers' first use of technology started with desktop computers and dry-erase boards. Today, teachers are using iPads, MacBooks, interactive smartboards, and even Apple TVs. Teachers no longer rely on chalkboards, whiteboards, or pen and paper to teach a lesson. According to the US Department of Educational Technology (2018), rapid changes across the country showed an increased need for preparing teachers to use and familiarize themselves with technology *before*

they even step foot in the classroom. Research today shows that many K-12 teachers struggle with the technological proficiencies that allow they as teachers to reach levels of innovative teaching (Koehler et al., 2014).

As the technological demands increased, teachers had to adjust their lesson plans to fit the needs of their students on an online platform (Cruz, 2020a). The reports and findings from this study attempted to determine what struggles teachers had with technology along with what supports or resources they felt would help them to use the technology in the future.

A constant challenge for K-12 educators included fostering innovative educational practices that would meet the needs of today's learners (Douce, 2016). This qualitative study was conducted with a purpose of exploring teacher's perceptions post-pandemic of technology usefulness, ease of use, and support/resources needed. It has been shown that the more exposure regarding teachers and technology, the higher their attitudes are toward using technology in their classrooms (Kan & Yel, 2019). An increase in student achievement in the classroom is the pinnacle of this study. To obtain that goal, understanding teacher efficacy and usage of the technology have to be studied.

In-depth interviews of teachers were conducted to gather data and gain a better understanding of teachers' perceptions of their use of technology. This is a qualitative approach by the researcher. Information collected from this study is important because it provides insight into teachers' comfort levels with technology, and how they use technology within their classrooms. As an administrator, I strive to find a plethora of ways to better support teachers. This will help shed some light on the topic.

Definition of terms

In this study, I have a few terms taken from the literature and used in the field. Definitive terms throughout the study are:

Blended learning: combines the strength of face-to-face and technology-enhanced learning. Blended learning allows both teacher and learner to interact with each other in an educational setting (Hrastinski, 2019).

COVID-19: Tawafak et al., (2021) stated that COVID-19 is an immanent worldwide pandemic of coronavirus. Although it is viewed as a health crisis, it has a vast impact affecting education.

Perceived ease of use (PEU): when a school district uses an information system and a teacher has determined that they can use that system painlessly (Davis, 1989; Scherer et al., 2019).

Perceived usefulness (PU): measures whether individuals believe that information systems enhance their job performance (Davis, 1989; Scherer et al., 2019).

Professional development: the process of obtaining fresh knowledge and skillsets related to education. A comprehensively sustained, and immediate approach to improving teachers' and principles' effectiveness in raising student accomplishments.

Remote learning: provides the ability for students and teachers to sustain a connection and engage with all information while performing from their home front (Mukuka, 2020). Opportunities for remote education are typically linked to emergencies that present a threat to student safety.

Smart Board/IWB technology: a robust interactive display that links a computer and projector that showcases images, videos, and user interaction with the board using a smart pen, finger, or other devices.

Schoology: an online learning platform that strives to increase learning with communication, collaboration, and greater access to content. Innovative approaches to Schoology helps "facilitate teachers, students, and parents to build a collaborative community of learners to fulfill the educational goals of the 21st century" (Biswas, 2013, p. 1).

Teacher self-efficacy: the confidence in an individual's ability to exert cool over their motivations and behaviors (Bandura, 1997).

Teacher burnout: burnout is described as emotional exhaustion, depersonalization, reduction of personal accomplishment, and extensive occupational stress, specifically among human service workers which include teachers (Jennett et al., 2003).

Technology integration: the combination of using best practices and resources in the technology field and turning them into daily routines at the workplace (NCES, 2020).

Zoom: a video conference tool that allows individuals to meet and work together productively "face-to-face". This makes meeting remotely feel more in person, which is essential to help users feel and stay connected.

Significance of the Study

Teachers and students benefit from this study due to exploring a teachers' perception regarding their use of technology throughout the classroom post-pandemic. This study is significant in that teachers' technology use throughout their classroom, can help increase student academic engagement. Research on teachers and their experience with technology is ever-increasing. Research can support the fact that technology helps teachers to achieve,

communicate, work together, and access needed information. Technology plays a role in the classroom for students motivation and learning. In English langauge learning, technology has been extensively used. The technology helps encourage learning resources (Goodyear, 2001).

There is an evolving body of research examining the COVID-19 pandemic, the new challenges it has brought for teachers, and how they are coping. In March 2020, Governor Tom Wolf announced the closing of all public schools in Pennsylvania (PA Spotlight, 2020). Students and teachers were instantly thrown into blended learning, and teachers had zero preparation for this change (Gutiérrez-Pérez & Martín-García, 2020). Teaching was switched from face-to-face to blended learning without warning for teachers and therefore teaching and learning changed.

As teachers increase their use of technology and resources in their teaching, positive social change can occur. This will help students meet the demands of 21st-century technology skills. This study is useful because the COVID-19 pandemic, provided an opportunity for teachers to create digital learning experiences that will continue with education in school years to come. The focus will provide technology coaches and professional development planners opportunities as education moves forward with a digital platform for the following school year (Superintendent, personal communication, March 22, 2020). The results of this study, including what technology teachers feel uneasy using and what resources/support they want, could be used to guide professional development opportunities toward aiding teachers with challenging technology and offering ongoing support. It has never been more crucial to research how prepared teachers feel they are and what support and resources they need to teach in the future. The results will be used to inform school districts and administrators of what support and resources teachers need and feel they will continue to need to teach students online, as well as illuminate how the changes brought by the pandemic have affected education today.

Research Questions

The problem that will be addressed through this qualitative study is that teachers were unexpectedly forced to adapt to the use of new technology due to the COVID-19 pandemic. As a result, teachers struggled to provide adequate instruction to their students online using the technology they had. The following guided research question is used in the study to see how elementary teachers perceive post-pandemic technology usefulness, ease of use, and resources/support needed.

The research questions address the purpose of this study regarding investigating the teachers' experiences with technology use after the pandemic. The following research questions aim to further assist this study.

RQ1: What are teachers' perceptions of technology usefulness in their classrooms?

RQ2: What are teachers' perceptions of technology ease of use in their classrooms?

RQ3: What are teachers' perceptions of the resources/support they need to use technology effectively in classrooms?

Review of Literature

Conceptual Framework

Davis (1989) technology acceptance model (TAM) is the theory and/or concept that supports this study. The TAM model focuses on two uses of technology. First, there is perceived ease of use (PEU) of the technology device. Then, there is the examining of teachers' attitudes towards the perceived usefulness (PU) of the technology. PU includes the teachers' perceived benefits from using the technology. PEU includes teachers' perceived ease of use which is an effort required by the user in adapting to the technology. Additionally, perceived usefulness

mentions to whether teachers believe that technology will help them perform better (Davis, 1989). Perceived ease of use is in reference to whether teachers feel that using technology is easy (Davis, 1989). Both ease of use, as well as usefulness are directly aligned with the first two research questions of this study.

The technology acceptance model will be used to examine teachers' experiences regarding their use of technology in their classrooms post COVID-19 pandemic. According to Davis (1989), there are two fundamental elements of user acceptance; perceived usefulness, as well as perceived ease of use. For example, teachers are more probable to implement technology into their classroom instruction if they believe that technology is simplistic and easy to use. TAM's core variables have been proven to be prerequisite factors that have influenced the acceptance of technological learning (Granic & Marangunić, 2019).

Earlier studies that used the technology acceptance model were used to explore the technology acceptance of the user. TAM has been an influential model to others in explaining why people choose to use technology or not (Granic & Marangunić, 2019). TAM serves as a useful framework that includes factors including the perceived usefulness of the technology, the perceived ease of use, and the intention to use (Braun, 2013). The most dominant theory used to state an individual's approval of information systems is the technology acceptance model. Napitupulu et al. (2017) said the motive of the TAM framework is to partner with researchers to assist in recognizing and inspecting factors that contribute to user acceptance of technologies based on perceptions.

There are different functions of perceived usefulness, and the perceived ease of use. Davis (1989) explained that if something is easy to use in education, then PEU has a large impact on PU. PEU would show an increase in usage by educators if factors such as leaders, colleagues,

and constant technical support are present. Technology integration is considered an external variable (e.g., attitude toward use, intention to use, and actual usage). Teachers' experiences will be explored towards their technology PU and PEU after the pandemic and how it could have a user acceptance on influence.

Attitude in connection with technology use has been studied in numerous models that attempt to describe individuals' intentions for technology use, including TAM (Teo et al., 2015). TAM was used in 2018, as the basic model to investigate the effects of the information technology domain on the PU, PEU, and regard promoting using multimedia, and the relevance and effect of these attitudes on behavioral purpose. Multimedia teaching has increasingly substituted traditional teaching which brings a burden for teachers in preparing multimedia material for their classes. This study applied TAM to elementary educators to discuss if they intend to use multimedia material. According to Weng et al. (2018), the results signified that the PEU of the multimedia substance would influence the intention to use. The attitude supporting use also influences the intention to utilize.

TAM can be used to explain how much an individual is willing to accept technology based on their perceptions of whether the technology or new learned skill is easy to use (Cheok et al., 2017). Cheok et al. (2017) said when deciding to incorporate the technology in the classroom or not, PEU and PU are the driving force. Teachers are the ones choosing which technology to use with their classroom instruction and they are choosing when to integrate the technology to their students. Therefore, by using the TAM, I will focus on teachers' perceptions of PU and PEU when implementing technology and how it affects user acceptance.

Hence is no doubt that the pandemic has caused a shift in education for teachers, administrators, parents, students, and the community. Despite powerful evidence of the gains and

use of technology, many classroom teachers fail to consistently implement technology in their classrooms. Therefore, the grounds of this qualitative study is to explore teachers' perceptions and ease of use and usefulness of technology, how they implement it, and the challenges they have encountered after the pandemic.

Review of the Broader Problem

The practice I used to muster articles for this literature review was to focus on the research topic, question, and problem. Crucial phrases such as *teacher's perceptions of technology usefulness and ease of use in their classrooms, teaching during the COVID-19 pandemic, teacher's intention to use technology post-pandemic, and resources teachers need to use technology more effectively* were researched using Sage Journals, ProQuest, Google Scholar, the National Center of Education Statistics, and ERIC to locate articles. Literature was picked for the review if it contributed to teachers' technology experience after the COVID-19 pandemic. When writing the interview questions, they were written based on the research questions. Then, they were spread through the technology acceptance model's lens and the theory that makes up TAM.

I reviewed the literature on teachers' perceptions of technology in the classroom. Multiple Walden Library Databases and Google Scholar were used to source articles. I also conducted research using diverse authors' names established in the literature regarding teachers' perceptions and attitudes towards technology in the classroom to find current studies. While conducting my research, two main focus areas continued to appear in the results. The first focus area included the technology acceptance model. This included how useful teachers thought the technology was. It also included how easy the teachers thought the technology was to use. The second area included various factors that emerged from the literature review including self-

efficacy, teacher burnout, technology/Zoom, and professional development. I believe these are all factors that contribute to teachers' experiences with technology after the pandemic. I discuss these factors in more detail below.

Teacher Self-Efficacy. Several researchers have acknowledged that teacher self-efficacy played a role in a teachers' use of technology before, during, and after the pandemic. According to E. M. Shaalvik and S. Shaalvik (2010), teacher self-efficacy is thought of how a educator believes they can plan and organize their lessons. Carrying out the instructional lessons that are required to reach educational goals also plays a part. These beliefs include how well a teacher meets the needs of their students, how well a teacher feels they plan and provide instruction for their students, how well a teacher compares to and collaborates with other teachers, how well a teacher communicates with students' parents, how well a teacher maintains discipline and answers students' questions, and overall, how good teachers feel they are at their jobs (E. M. Shaalvik & S. Shaalvik, 2010). Due to the last-minute shift during the pandemic, teachers struggled to plan and organize ahead of time and carry out instructional goals.

One literature review showed that teacher self-efficacy was found to be affected by their views of technology (Kan & Yel, 2019). The ability to keep up with the changing conditions was found to be the most held opinion among teachers as to what makes them adequate teachers. When teachers had negative feelings toward technology in the classroom, they had low self-esteem and low self-efficacy (Kan & Yel, 2019). With the increase in technological demands, while teaching remotely during the pandemic, teachers faced more threats to their self-efficacy beliefs. Technology was a challenge during the pandemic-as it was the only way to educate students. Paper copies of lessons for students were taken away, some students did not have wifi

at home to complete assignments, and checking in with students for understanding was hard to do over Zoom.

Another review conducted by Lee et al. (2011), showed that hefty workloads, disregard of support from the school or district and shortage of assets, including curriculum, supplies, technology, and training, were all found to negatively affect special education personnel's self-efficacy beliefs. While professional development was necessary, requiring further professional development sessions created another pressure point on teachers' time and energy, when they too were coping with trauma and stress of their own. During the pandemic, professional development was nonexistent.

Self-efficacy plays a role in teachers' and how they make use of electronics in the classroom. A study was conducted by Pan (2020), that search the contribution of technology approval and technological self-efficacy to attitude in connection with technology-based self-directed learning. A total of 332 students were elected to engage in questionnaires with reference to their technology acceptance and technological self-efficacy. Results indicated that there was a connection between teacher attitude toward technology and self-directed learning and students' technology acceptance and technological self-efficacy. Students that had considerable technology acceptance and technological self-efficacy appeared to have a elevated approach toward technology-based self-directed learning (Pan, 2020).

Teacher Burnout. Some researchers expressed the effects of teacher burnout before, during, and after the pandemic (Gomez-Dominguez, 2022). Burnout is theorized as stemming from long-term job stress, specifically among human service workers, which includes teachers (Jennett et al., 2003). Even thought teachers reasons vary, they experience stress in their workplace (Jennett et al., 2003). Educators must have support from their school district on how

to recognize and handle stress before burnout occurs. If stress is handled ineffectively over some amount of time, teachers may experience burnout (E. M. Shaalvik & S. Shaalvik, 2010).

Along with burnout, exhaustion has been identified as the most striking result of the stress from job demands and feelings of decreased accomplishment at work (Friedman, 2020). E. M. Shaalvik and S. Shaalvik (2010) analyzed emotional exhaustion and depersonalization, as they considered them to be the two central elements of teacher burnout. They found that both elements were negatively corelated to teacher self-efficacy. Research showed that teacher self-efficacy and educator burnout showed similarities (E. M. Shaalvik & S. Shaalvik, 2007). Unfortunately, this similarity and connection demonstrated a negative relationship together. The lower a teacher's self-efficacy beliefs, the higher their feelings of teacher burnout.

Friedman (2020) reviewed teacher burnout and how often the burnout results in teachers leaving the field and leaving the education profession. According to the Learning Policy Institute (Darling-Hammond et al., 2017), in 2018, the U.S had an estimated shortage of 112,000 teachers. When there is a teacher absence in the building, other teachers become more overwhelmed than ever because they must cover the classroom in-house, which is causing them to lose their planning period throughout the day. Teachers were left to cover for their colleagues when they were absent, which left them with no planning time throughout their school day. According to Thornton et al. (2007), special education educators show a greater likelihood for teacher burnout and leaving the profession compared to general education teachers possibly because special education teachers have different work demands that require them to do extra paperwork and additional record keeping.

According to the Pennsylvania Department of Education (n.d.), there have been 13,277 emergency teaching permits issued so far in the 2021-22 school year. In February 2021, a bill

was introduced in Pennsylvania to help alleviate the substitute teacher shortage. Rich Askey, the president of the Pennsylvania State Education Association (PSEA), the state's largest teacher's union told the USA Today Network that the law was a "really good, strong first step" that hopefully will ease the pressure on schools struggling to cover COVID-19 teacher absences (PSEA, 2021).

According to the Center for Disease Control and Prevention (CDC, 2020) many schools had to offer virtual learning for students to resume education for the extent of the 2020-2021 academic school year. Teachers had little choice regarding teaching online. They had no other choice but to teach online and had to keep pushing forward each day by embracing technology in today's world. According to Goldschmidt (2020), teachers may have experienced fright and discomfort when shifting their teaching online. In addition, they had to do so at such a swift pace and in a short period which contributed to teacher burnout. The use of technology contributed to teacher burnout due to their workload drastically changing to meet all students needs.

Technology. The use of technology by teachers is a key theme in the literature. The COVID-19 pandemic increased the technological demands that teachers faced on a day-to-day basis. Online education during the pandemic, proved to be a difficult transition. This began with the lack of technology instruction, resources, and findings to sufficiently supply educator and student needs. Teachers began teaching their students through a computer and had to adjust their lesson plans accordingly (Cruz, 2020a). They had to learn how to use new technological tools for themselves, their students and even their students' parents. School districts had to scramble to get technology experts to help teachers prepare to move all instruction online (Lieberman, 2020). In addition, there were substantial increases in online content stretching bandwidth capabilities in most schools. While these issues were anticipated, others were less so. For example, sudden

closures required students, families, and even teachers and staff members to find alternate locations with high-speed internet access to attend their classes (Coyne et al., 2020). Comcast and Charter Spectrum were two of many companies, who graciously offered their internet services for free to families. This was offered to low-income families for a limited time during the pandemic (Guernsey et al., 2020).

The short timelapse linking the settlement to shut down school, and the onset of remote learning created a shuffle in the country to produce online instruction, requiring flexibility to adapt at the state, district, and school tiers. Zoom, or other videoconferencing platforms, became the primary way teachers communicated with their students. Teachers soon discovered themselves taking on unparalleled responsibilities. Teachers reported struggles with understanding how to use technology effectively. There were reports of 'Zoom bombing" when non members would join the classroom Zoom, while calling out obscenities or finding other ways to disrupt the lesson (Munyan-Penney & Barone, 2020). Some teachers struggled with deciphering how to host and lead live learning sessions (Herold, 2020). This led them to rely on recording their lessons and publishing them to Schoology, which was their school district's main learning platform. Teachers reported working longer hours than before the pandemic. For example, one teacher in rural Michigan reported providing individual online instruction meetings with students for 4-5 hours a day, with hours of transporting educational materials to student's homes (Gewertz, 2020). Many teachers with young learners had to rely on caregivers to help their child use their iPads. When there were troubleshooting concerns on the technology devices, school administrators had to help families get an internet connection (CDC, 2020).

Meeting the needs of all students was a struggle for teachers during the pandemic. This included special education students. It is estimated that 13% of public-school students receive

special education services in the United States (NCES, 2020). According to Silva (2020), over seven million children in the United States have disabilities that require specific assistance in school. These disabilities included, but not limited to, physical, mental, emotional, and behavioral. Special education, emotional support, life skills, and autistic support students and teachers faced unique challenges with technology. These students had more significant needs that could not be met remotely. All students receiving special education services had to have remote work modified for their individual needs and goals (Tremmel et al., 2020). Individual Education Plans are required to be set up and followed by the school district for children with special needs (Silva, 2020). All students receiving special education services had to have remote work modified for their individual needs and goals (Tremmel et al., 2020).

Many students with specific handicaps and disabilities struggled to use Zoom, requiring the assistance of human technological aides which is not included in initiatives such as Zoom (Hill, 2020). Teachers provided individualized learning packets for their students based on their needs and goals and found ways to distribute them to students (Cruz, 2020a). Schools are mandated by law to present special needs children with complimentary and suitbale public academics and special services (US Department of Education, 2020b). During the COVID-19 global pandemic, school districts continued to provide dispense needs students with therapeutic healing services but moved those services online. All of this caused a strain on teachers. It was a completely new way of education for students.

Another review conducted by Kan and Yel (2019), showed that the more a teacher is familiarized with technology, the more positive their attitudes are toward using technology in instruction. In this study, candidates who were on a computer for longer periods during the day were found to have more upbeat feelings and attitudes towards using technology in instruction

(Kan & Yel, 2019). Perceived usefulness and perceived ease of use in terms of teachers' experiences with technology after the pandemic will be explored in my study including how it may impact user acceptance.

All of the struggles' teachers experienced with technology during the pandemic, also showed how technology became essential during a period of isolation as well as social distancing. During the pandemic, technology was leaned on to gain knowledge, live, and remain attached to the world. Technology is best utilized to keep consistent social, physical, emotional, intellectual, and spiritual well-being for children, in a setting where children are collaborating with an adult (Goldschmidt, 2020). The COVID-19 pandemic has made a ever changing impact. All of the disruptions and frustrations aside, it is hopeful that technology propels us toward a fresh way of life that enhances well-being for all.

Professional Development. Several researchers acknowledged the importance and need for professional development opportunities in schools. No school district was ready to address the pivital educational needs of students and teachers during a pandemic. With the switch to remote learning during the pandemic, the focus of education shifted, and the administration had new school roles and responsibilities to provide for their teachers, students, parents, and the community. There were many hurdles and barriers. Many teachers were not amicable with online software like Zoom and received slight, if any, training in virtual content delivery (Coyne et al., 2020). There was no time for professional development during the pandemic, let alone quality professional development. According to Gulamhussein (2014), traditional professional development is not successful because it does not provide teachers with ongoing support during implementation. Professional development is usually presented through lectures and is less than one work day long.

The way professional development is dispensed to teachers often impedes learning rather than shifting the mindsets of teachers and their methods (Darling-Hammond et al., 2017). Unless the administration finds engaging ways to deliver professional development, change will remain non-existent, and implementation will not be successful (Darling-Hammond et al., 2017). Unfortunately, not only was professional development ineffective in the past, there was also no face-to-face professional development at all during the pandemic.

As hard as it was to make professional development engaging, schools had to get creative to make professional development work for their teachers. One strategy that proved to be effective in providing at home teaching support throughout the pandemic, was virtual professional development for teachers. Hulon et al. (2020) used The Technological Knowledge, Pedagogical Knowledge, and Content Knowledge (TPACK) framework (Koehler & Mishra, 2005) to stand as the rationale for bolstering in-service teachers in online professional development sessions by offering digital training. These sessions homed in on pedagogy for virtual education as well as particular technologies to bolster students learning. Hulon et al. (2020) discovered that the educators desired convenience, felxibility, and current professional development (virtual) options with several entry points and carrying levels of expertise.

Video conferencing was used as a safe alternative to support teachers who were teaching online during the educational lockdown (Maher, 2020). This allowed teachers to still attend entire building faculty meetings and associate with one another in a large group. The use of break-out rooms in Zoom allowed teachers to share and interact in pairs. Additionally, the use of webinars has shown to be an essential method to extend teachers world-wide (Koehler et al., 2014). Koehler et al. (2014), found the high majority of participants within their study felt that the webinars identified the struggles that were being affected by their online teaching, and they

will manipulate how they instruct online as a finding of the webinars they attended. Webinars were also suggested to other teachers.

Social and emotional support for one other and the students sprung as a pivotal need for professional development as both formal educators and in-service educators experienced emotional and social peaks and valleys with remote teaching/learning and the shelter in place order (Venet, 2020). Since professional development sessions were not being offered at the time (due to social distancing), teachers sought out other ways to support one other socially and emotionally. This included computing extra time for minimal communication during weekly conferences and sending personalized electronic mail to each student to soften the social and emotional stress.

Teachers find professional development to be useless when it doesn't focus on teaching strategies that are connected with specific content (Darling-Hammond et al., 2017). Franckowiak (2017), noted that from the teachers perspective, professional development must relate to the content teachers teach. Otherwise, it is considered meaningless. The author suggests that unfortunately, teachers won't buy into new approaches and classroom implementation when they are being dictated by the school district or administrators.

Many teachers viewed professional development more as compliance as opposed to learning (Gates & Gates, 2014). These authors reported that 30% of the teachers in the study stated that they were unsatisfied with professional development because they were not allowed to choose what topics were presented. After all, the school system or school administrator chose for them. According to Gates and Gates (2014), it was noted that teachers felt that professional development initiatives were worthless when they were not applicable enough to the content specifically taught and the skills needed to implement new approaches.

Administrators can benefit from knowing teachers perceived usefulness and ease of educational technology use, as well as their intent on using the technology moving forward. Professional development ought to help content teachers gain new skills and understanding to help them successfully reach the implementation of district-wide or school-wide goals. This theme plays an important role as an administrator because we will be able to understand what resources or support teachers need to use the technology more consistently in their classrooms. This theory will support my study because from the outbreak of the pandemic, school systems, teachers, and administrators in North America were challenged to abruptly change instructional delivery while creating a safe environment for upwards of than "50 million children" (Malkus et al., 2020, p. 1).

Implications

The anticipated findings of this study include teachers' perceptions of useful technology, the ease (or lack of) of use of technology, and the support/resources needed to implement technology. These findings may have several implications that will lead to the potential project for this project study. One direction could be to amass the findings in a power point presentation to deliver to the administrators and technology support staff from the district and beyond. Another potential project would be to target some of the technology that the teachers expressed difficulty using and then provide professional development. In each case, the findings of this study will be the foundation of the direction taken.

Summary

The educational field has had to make changes due to the COVID-19 pandemic. Teachers in the education field will forever be affected by having to switch from brick-and-mortar schooling to online learning throughout the pandemic. Section 1 demonstrated the framework of

my study and clarified the terms used in the study. The local and greater problem was introduced with the significance and rationale of the study. The desire of this study is to view teachers' perceptions post-pandemic of technology usefulness, ease of use, and support/resources needed. Additionally, it is important to determine what support or resources teachers need to be successful when using technology in their classrooms post-pandemic.

Next, a review of the literature introduced background information for the study. The review started with a snapshot of how education has been for teachers since we entered into the pandemic. A review of the literature attested the reasons why teachers struggled during the pandemic. Those reasons included technology, Zoom, self-efficacy, teacher burnout, and lack of training. The study was supported by Bandura (1997), self-efficacy beliefs, affect what a person thinks of themselves, how they feel, and how they will be motivated in different situations. The review of the literature indicated that the more technology is revealed to teachers, the better their attitudes are in regard to utilizing technology in the classroom (Kan & Yel, 2019).

Section 2 provides information about the research format and approach, the sample, the data collection, data analysis, and study results. Section 3 will provide my project study details. Section 4 will address what knowledge I gained from the study and a short discussion about the final study.

Section 2: The Methodology

This portion of the project study focuses on the qualitative design used for this doctoral study. The participant sample is described, selection criteria is noted, and access procedures for data collection is identified. Data analysis methods, themes, and findings are also presented in this section. The superintendent and school administrators at the study school, can use the results

of this project to expand their knowledge on what teachers need to help incorporate technology in the classroom.

Research Design and Approach

The basic qualitative design is appropriate for answering the research questions because each of them asks about the perceptions of the teachers. In each instance the research questions steer to the basic qualitative design because they seek to understand descriptions teachers provide of the usefulness, ease of use, and resources/support needed which each are based on the TAM theoretical framework. The qualitative tradition is appropriate because people's experiences and thoughts are sought through an interview format. The selection of the qualitative design was based on the problem, the purpose, and the research question posed in Section 1. The following research questions guided this study:

RQ1: What are teachers' perceptions of technology usefulness in their classrooms?

RQ2: What are teachers' perceptions of technology ease of use in their classrooms?

RQ3: What are teachers' perceptions of resources/support they need to use technology effectively in classrooms?

Basic Qualitative Design

I used a qualitative study approach because of the minute number of respective participants for this project, the specified context, and the questions along with the intention (Creswell, et.al, 2009). A qualitative research approach was the most acceptable type of research for this study because it permitted me to gather teachers' narratives from their experiences and what their work meant to them (Ravitch & Carl, 2016). Data were collected by an in-depth interview script that reflects participants' personal experiences with technology use during the pandemic. The script consisted of open-ended questions that began with the words *what* or *how*

so the researcher can harvest mastry of the experience (Creswell, et.al, 2009). Using the qualitative approach allowed me to seek results to the research questions through specific information about behaviors, opinions, and beliefs (S., Merriam, 2009). I managed the study and collected my data in a way that participants remained completely anonymous.

Justification of Research Design

A quantitative research design was not chosen to use because the study did not demand a search to verify the hypothesis about phenomena or quantify disparity (Creswell, 2012). There was no point in time where this study involved large numbers or predictions. Instead, I was inquiring about individual teacher's experience in the classroom, with technology, after the pandemic. A quantitative research design does not permit the freedom to inspect participant experiences or answer the way the participants respond in their own words. According to S. B. Merriam and Tisdell (2015), quantitative research dismisses individual humans and focuses on numerical data. Therefore, a quantitative research method was not appropriate for this study.

In addition, a mixed-methods research design was not the right choice for this study due to the study being primarily a basic qualitative design. A mixed-method research design requires two types of data to be collected. Only one type of data was collected in my study and that was qualitative data. Lastly, participants will be encouraged to respond openly to the research questions. This will allow me to get to the root of their experiences with technology utilization in the classroom.

A basic qualitative approach was selected for this study to understand and learn how rural elementary teachers integrate technology into their classrooms post pandemic. For this research study, Walden University IRB approval was obtained before conducting any research or contacting potential participants. Teacher-participants were interviewed face-to-face- while also

recorded and transcribed by Zoom video conferencing. Walden doctoral committee approved questions and interview protocol prior to interviewing participants.

Participants

As the study was outlined to explore how rural elementary teachers integrated technology in the classroom post pandemic, the location for this project study was a rural school district located in an urban northeastern state. The school district has four elementary schools but only one elementary school was chosen for participant interviews. This elementary school is K-5, has one school principal, one dean of students, one school counselor, and 17 classroom teachers. Interviews with teachers from various grade levels yielded ample data to answer the research questions.

Criteria for Selecting Participants

Selecting participants for this study was conducted through purposeful criterion-based sampling. A purposeful sample was the most suitable for this type of research study because of the specific criteria used for the participants. The criteria for selection were (a) an elementary teacher in the school district, and (b) having taught using technology in the classroom post pandemic. The sample of 10-12 teachers was pulled from a selection of 24 teachers from an elementary school in the school district. Ten out of 11 participants agreed to participate in the study (Section 2, Table 1). The total sample size was ten teachers who met the selection criteria and agreed to participate. Teachers selected to participate in the survey represented various levels of education obtained, levels of experience teaching, grade levels taught, and teaching in a regular or special education classroom. All participants selected, provided insight on technology use in the classroom post pandemic. Table 1 illustrates the demographic information of the participants, including as gender and grade level taught.

Table 1

Demographic Information of Participants

Pseudonym	Grade	Years taught
A	K	9
B	K	13
C	1	20
D	4	35
E	2	21
F	K-4	17
G	K-4	4
H	2	20
I	K	17
J	1	31

This study consisted of a small number of purposefully selected participants regarding a specific phenomenon. The sample size included 250 teachers from a school district in Pennsylvania. By form of email, I invited teachers from a variety of grade levels including Kindergarten to fourth grade. If the participants taught in Kindergarten, first, or second grade, they taught in a self-contained classroom. Therefore, they teach English language arts, as well as other core subjects of mathematics, social studies and science to their students. The third and

fourth grade teacher participants teach one or two subjects. A learning support teacher and a *specials* teacher also participated in my study. Specials teachers teach subjects including gym, art, music, and library. They assist students in all grades in the elementary building. Using minimal participants is preferred because it provides the researcher the change to capture an in-depth picture and a further comprehensive portfolio of those involved in the study (Creswell, 2012). If saturation is not reached in a qualitative study, the researcher can include additional participants. The statement "until saturation was achieved" is frequently incorporated in the reporting of qualitative studies to justify the termination of data collection and analyzation (Leese et al., 2021). In my study, saturation was reached due to new information gathered from additional interviews.

Participant Justification

One rural school and 10-12 selected participants were initially planned for this study. Eleven participants were identified as meeting the selection criteria. However, 10 out of the 11 agreed to take role in the study. The number of key participants justified the number of available school faculty in this rural setting. These participants provided insight into using technology in the classroom. Given the population size of the school and the number of selected teachers, highly relevant information for analysis was concluded.

Participant Access

Compliance was obtained by following Walden University Institutional Review Board (IRB) guidelines and securing IRB approval (03-24-23-0387658) before conducting any research, contacting the school administrator, reaching out to potential participants, or collecting data. After IRB approval, I emailed the superintendent and building principal the goal of my project study including details of the process.

I am currently a secondary administrator at a middle school in the district. The teachers that I used as participants were teachers in an elementary school in the same school district. I previously taught at this elementary school with some of the participants. Rapport between us was already established. As an employee in the district, I have access to all staff members' email addresses for contact. After permission from the district's superintendent and elementary school principal, I contacted the participants via email. An invitation to participate was emailed to eleven K-5 rural elementary school teachers who met the criteria of the criterion-based sampling strategy. All 11 responded to the invitation. One teacher backed out of participating in the last minute due to family scheduling conflicts. The teachers at the elementary school were not under my supervision.

Once I received consent from the superintendent and the elementary building principal, teachers received an email from me explaining the purpose of my research and the reason for their contribution to my study. Interview questions were emailed ahead of time so participants could review them prior to committing. Participants were made aware that their participation in this study was voluntary. Teachers who committed to participating received another email from me, along with an attachment, which included study information and a consent form. The email required them to reply "I consent". The informed consent form included personal privacy statements, procedures for safeguarding participant information, the assignment of pseudonyms to protect participants' identities, and the ability to withdraw from the participation of this project study at any time.

Researcher-Participant Relationship

There were previous acquaintances or relationships linked to the participants in the study. Years prior, I was a teacher in the same building as some of the participants. I did not work

directly in the same grade level as any of the participants chosen. There was no supervisory role at any time prior or during the project study. I received consent from the principal of my academic institution to conduct research with the educators chosen A researcher-participant relationship was made by contacting each participant via a welcoming email asking if they would be inclined to support me with my research. After the initial email, I followed up with teachers by an additional email correspondence in which I reiterated the rationale of the study, expressed the confidentiality agreement, and relearned involvement through an interview.

Before conducting an interview, each participant was reminded that their participation in the study was voluntary. Participants understood that they were free to withdraw from the study at any time. During the Zoom interview, participants were notified when the recording would start and understood I would be taking notes during the interview. Concluding the interview, I welcomed any further questions or discussion and thanked each participant for their precious time to this study. Finally, I ensured my personal biases did not interfere with the study by following the interview protocol.

Protection of Participants

Many measures were taken for the protection of participants' rights. Prior to working with participants, I completed The *CITI Program Human Subjects Protection* training. Also, when attaining participants, I ensured that the process was all voluntary and anonymous. The participants had belief in me to nurture the privacy of the interview results which showed their willingness to participate in the research. Confidentiality agreements were distributed to the school principal and participants.

I began by sending individual emails to invite teachers to participate in my study. I used the school district email directory to gain school email addresses for those requested to

participate. The original email included study information and informed them of the purpose of the study and how they could help contribute to the study. It also included a statement of voluntary participation, the ability to withdraw from the analysis, and confidentiality. When teachers showed they were interested in participating, they replied affirmatively to the email. Once they showed interest, I sent a follow-up email that included the informed consent and potential dates to interview. This email also included a consent form that participants signed and sent back to me via email. If teachers had any questions before starting, I was available to answer questions. All documents received from participants during the study were kept in a secured cabinet and maintained only by me. After the information was collected, recorded interviews were deleted from my Zoom account. Participants understood that I would use pseudonyms to ensure confidentiality for the identity of the participants. For example, Teacher A, Teacher B, Teacher C, etc.

Consent and confidentiality accord were addressed before collecting any information. The superintendent of the school district, as well as the school principal gave me permission for this research to be completed with the teachers before starting. The superintendent and principal held expectations that teachers' responses will be kept secluded and that defense from harm will be preserved in future collaboration with the teachers, especially related to the data.

Video recording from Zoom was deleted after the transcript was downloaded. All interview data collected was stored and organized on a password protected laptop only accessible to me. Non-digital data was stored and locked in a secured file cabinet in my home office. Per Walden University protocol, after reaching the five year-post-completion period, all digital files will be deleted from the secured laptop.

In conclusion, any ethical issues related to the participants treatment will be addressed. Before starting this process, I obtained permission from administrators to promote confidentiality for the individuals participating. Also, participants received information about the rationale of the study and how I intended to use the data to make improvements for our school district. It was made clear to participants that participation is completely voluntary, and informed consent will also be provided to participants as well as their right to refuse to continue at any point. At any time during the study, participants had the choice to withdraw from the study. The data collected was considered private data and specifically the aggregated results were shared without direct consent by an individual. In conclusion participants were given the option to request any questions they may have about the research study prior or after the data collection as well as analysis.

Data Collection

The data collection instrument I used consisted of Walden doctoral committee-approved interview questions guided by approved interview protocol. In this section I will describe and justify the data for collection, discuss the interview protocol, and identify the source for each data collection instrument. Data was generated, gathered, and recorded throughout my research, and procedures for gaining access to participants is explained.

Data Collection Justification

The primary data collection methods were open ended 30-45-minute interviews using Zoom to answer the research question. Interview participation was voluntary and anonymous. A reflective journal was used to document field notes during the interviews. Teacher efficacy in consistent technology instruction, in K-4 classrooms, was investigated in this qualitative study.

Qualitative research, according to Ravitch and Carl (2016), allows me to understand the teacher's perceptions and how they view, approach, see, and experience the world. To conclude, this qualitative study will help me present the awareness of the teachers' perceptions of their use of technology and the resources they need to be successful in their classrooms. Interviews were conducted after getting IRB approval and consent for participation.

Data Collection Instrument

Once the interview questions were approved, the interview questions were revised per the Walden doctoral study committee. According to Creswell and Báez (2020), interviews can provide differing perspectives. The participant interviews were conducted in person but used Zoom Video Conferencing to transcribe the interview. Video and audio were captured during the interview. All interviews were scheduled at a previously agreed date and time. Participants were made aware that the interview would be recorded via Zoom. Each and every transcript was thoroughly reviewed to check accuracy, maintain ethical standards, and avoid researcher bias. Participants were enlightened that they would obtain a copy of the transcript via email.

I developed open-ended questions that were based on the research questions for the study and the related literature. The open-ended questions were approved by my Walden committee. The interview questions were structured to gather information directly related to answering the research inquiries. The interview questions corresponded with all research questions and aligned with the qualitative research approach. Interview questions can be viewed in Appendix C. After participants completed the interview with me, I coded the survey results for participant identity by replacing participants' email addresses in the study results with a pseudonym like Teacher A.

Sufficiency of Data Collection

In this project study, there were three key research questions to investigate the teachers' experiences with technology use after the pandemic. These research questions made up the basis

of the project study. The nature of the research inquiries was aligned with the interview protocol that was used during the face-to-face interviews. The choice to use an interview as my primary data collection was based on the research study questions.

For this study, I anticipated 10-12 participants. Eleven participants signed up to contribute to my study and then one participant fell through at the last minute due to a scheduling conflict. The 10 participants were sufficient to speak to how educators are using technology today post pandemic. The interviews provided me with sufficient data to answer each research question and the responses showed what teachers need in order to use technology efficiently in the classroom moving forward.

The interview data captured a plethora of teachers' experiences utilizing technology in the classroom. Interview data were reviewed and organized multiple times. Once the data was organized, I was able to see a sense of direction for the school district to improve teachers' experiences employing technology in the classroom. This provided me guidance on how to proceed with the data analysis. As I peeled back the data collected, the big picture was obtained.

Transcripts from each interview were emailed to the interviewee. Participants reviewed their interview transcript to ensure that the researcher's bias was never reflected in the data. In addition to participants reviewing their findings, researcher notes from each interview were recorded in a reflective journal. Reliability and validity were established by conducting multiple reviews of the face-to-face interview and the reflective journal.

Processes for Data

Each interview was recorded using Zoom Video Conferencing to ensure accuracy. The data results from the interview were downloaded, transcribed, and saved. This allowed for computer-generated transcripts which were listened to and improved by the researcher. The

names of each interviewee file were changed to reflect the participants' corresponding pseudonyms (e.g., Teacher A, Teacher B, Teacher C, etc.). During the interview, notes were recorded from each participant to review key points or ideas that were significant after each interview. Throughout the data collection procedure, I continuously used a reflective journal with researcher commentary to accompany the questionnaire data as I collected data. The Zoom recordings were permanently erased from my Zoom account. All notes from the interviews are locked aside in a file system in my home office. I used thematic coding to define themes and classify key information.

Systems for Keeping Track of Data

For this research study, I put a system in place in order to keep track of the data. Once data from the face-to-face interview was recorded, I used Zoom's transcribe feature to transcribe the interview. The transcribed interview was then saved to my desktop and saved into a file where I housed information for my project study. Interviews were saved as a corresponding pseudonym (e.g., Teacher A, Teacher B). During the interview, a reflective journal was used to document field notes.

Procedures for Gaining Access to Participants

To gain access to participants, certain procedures were followed. After I received IRB permission from Walden University, I emailed the superintendent informing her of the goals and process of my project study. In this email, I asked the superintendent for permission to access the participants' email addresses using our Google email platform, at a certain elementary school in our school district. Once the superintendent granted me permission, I emailed the building principal the goals and process of my project study.

The participants in my study, were teachers that taught in the principal's elementary K-5 building. I explained to the principal that I would be setting up face to face interviews over the next month with 10-12 teachers in her building. An invitation to participate was emailed to eleven of her school teachers who met the criteria. The teachers at the elementary school were not under my supervision.

Role of the Researcher

My role as a researcher was to conduct an ethical study in a professional manner. I was and continue to be an assistant principal at the Middle School at the time that this project study research took place. The school that my participants came from, is an elementary school building in the same district. Years ago, I taught in the building where the participants currently teach. The previous working relationship helped when obtaining the trust and information needed from the teachers for my study. The rapport was already there which made for an engaging, professional relationship. The Walden interview protocol was followed (see Appendix C). After the project study was completed and approved, the findings were shared with school administrators, including a plan for possible professional development from the study. My sole interest as a researcher was learning teachers' experiences utilizing technology in the classroom post pandemic.

Data Analysis

The goal of this research study was to investigate teachers' perceptions of technology use in the classroom post pandemic. In order to do that, I received generated transcriptions from Zoom and then analyzed the interviews for emergent themes by hand based on the responses received from the participants. Each and every participant received a summary of their own interview to review. After the interviews were completed, responses were typed and thematic

coding was used. According to Caulfield and Senger (2017), thematic analysis is a suitable approach to research because it allows you to find out information about people's views, knowledge, opinions, values, or experiences from a set of qualitative data. The coding was completed by examining each category of responses withi n each interview independently for each participant. Next, I made a comparison by looking at each of the categories across each participant. I highlighted information from their responses to help identify common themes, ideas, and topics. I looked for patterns that came up repeatedly with meaning, and I searched for similarities and differences connecting participants' responses.

Thematic coding allowed for flexibility when it came to interpreting the data. Data was mapped out by using Delve Qualitative Analysis Software System. This system allowed me to upload each transcribed interview and code common themes and topics. According to Saldana (2016), "data are not coded, they are recoded" (p. 68). Sorting the data into broad themes provided flexibility and allowed me to approach large data sets easily. Data was mapped out by creating an interview question chart (see Table 2) which displayed participant response to each research question.

Table 2

Example of Interview Question Chart for Research for Research Question 1

Participant	Interview Question 1	Interview Question 2	Interview Question 3
	How useful do you think iPads are in your classroom? What are they used for?	How useful is your Smartboard in your classroom? What is it used for?	How useful is your google mail in your classroom? What is it used for?
Participant A	I think that…	Our Smartboard is…	The only thing we use Google Mail for is…
Participant B	We use them…	I use my Smartboard…	I don't…

Participant	Interview Question 1	Interview Question 2	Interview Question 3
Participant C	I think they can…	Oh gosh!...	Google mail is great for…

Table 2 illustrates a chart used to organize the participant responses to the interview questionnaire. There were 22 interview questions and 10 participant answers. The excel chart allowed for a "whole picture" visual of data collected from my interviews. After all the data were coded, the themes or patterns were organized to garner a deeper comprehension of the findings. All data spreadsheets generated were reviewed multiple times to ensure all common themes were properly documented.

Evidence of Quality

Proper research practices were followed in this study. The main practice in qualitative research is to ensure trustworthiness of the data by addressing, confirmability, credibility, and dependability. To address confirmability, I must look for similarities and differences between what each participant shared during the interviews. Sources of data must be converged or triangulated to ensure that participants' understanding of the phenomenon is accurately represented (Creswell, 2009). Patton (2002) suggested that trustworthiness is the extent to which the researcher can balance the perspectives of the participants in a fair manner. Researchers must be confident that the research is trustworthy and credible.

All interviews were conducted and analyzed by one researcher. This can tend to be subjective since it relies on the researcher's judgment. I managed my biases by maintaining a neutral stance so that my personal biases would not taint the findings. I reflected carefully on my own choices and interpretations. For example, I periodically examined what my views were and

why I had them during the research process. I also paid close attention to the data to ensure I was not interpreting statements incorrectly or obscuring the data.

Member checking is a technique that is used for exploring the credibility of results. Member checking was established by having participants check the accuracy of the transcribed report. Participants were asked to review to ensure accuracy. Candela (2019) contends member checking should not be about establishing validity in a study but more of a reflective experience.

Discrepant Cases

In a qualitative research study, there are steps I took for discrepant cases. I reexamined my transcripts for consistency. Also, I went back and looked at my notes. With a discrepant case, I reviewed the interview transcripts several times revising the categories to make sure all data were accounted for and that all patterns were accurate. I noted discrepant cases in the results.

Data Analysis Results

Data Analysis Process

After receiving Walden University IRB approval (03-24-23-0387658), 10 teacher participants were interviewed. The sample size was sufficient to obtain data saturation and to answer each research question:

Research Question 1: What are teachers' perceptions of technology usefulness in their classrooms?

Research Question 2: What are teachers' perceptions of technology ease of use in their classrooms?

Research Question 3: What are teachers' perceptions of resources/support they need to use technology effectively in classrooms?

Face-to face meetings were scheduled with those 10 participants. All meetings were voluntary with an understanding that participants would withdraw at any time. The recordings from the face-to-face interviews administered in this study were downloaded through Zoom. Each Zoom interview was also recorded in order for the interview to be transcribed. The audio recordings from the interviews and the names of these files were changed to a pseudonym for protected privacy. I am the only person who is aware of each participant name and will not reveal their identity in the findings or to any superintendent or school administrator. A pseudonym was used for each participant. Transcripts were reviewed to verify the accuracy of the transcripts and interview responses were stored electronically.

In the analysis of the interview transcripts, first I examined each category of response within each interview independently for each participant and then compared each of the categories across participants to highlight similarities and differences. The data was then reviewed for patterns across responses. While reading the transcripts, I wrote notes and highlighted statements. Emergent themes were identified from each interview response and compared across the interview responses of all teachers participating. The open-ended questions were dissected and coded for information and themes emerging. The data from interviews was synced with a qualitative coding software, called Delve, including general questions that were gathered as well as open-ended questions. Delve was used to code the data. Interview data from the transcripts were organized in a chart and information was organized by my three research questions on teachers experience with technology in the classroom. The research question and the theoretical framework guided the data analysis process and coding analysis followed the data review. Themes, codes, and sub codes were identified.

Written notes from interviews were analyzed for themes and categories and coded as the interviews were completed. Data results were compared, collected, and reflected upon on a continuous basis. Using the coding software, creating charts, and the interview, offered less reliance on the researcher's perspectives and allowed the potential for a more objective view of categories and themes.

After all the data were coded, the themes or patterns were organized to gain a more in-depth grasp of the findings. All data were reviewed multiple times to ensure all common themes were properly documented. Table 3 illustrates an example of data analysis depicting the codes and themes that surfaced.

Table 3

Examples of Data Analysis: Codes and Themes

Research Questions	Codes	Themes
RQ1: What are perceptions of technology usefulness in their classroom?	Tech ticket Interactive Independent Resources	Useful Systems/Support Engagement Collaboration Communication
RQ2: What are teachers' perceptions of technology ease of use in their classroom?	Easy Progress Practice In the Moment	Time Collaboration Systems/Support
RQ3: What are teachers' perceptions of resources/support they need to use technology effectively in the classroom?	Needs Training	Professional Development Time

	Tech Ticket Confidence	Collaboration

Findings

I used the study's three research questions to guide my project study: RQ1) What are teachers' understanding of technology usefulness in their classrooms?; RQ2) What are teachers' perceptions of technology ease of use in their classrooms?; and RQ3) What are teachers' perceptions of resources/support they need to use technology effectively in classrooms? The problem addressed by the research questions is that teachers experienced barriers when it came to using technology in their classroom. The project study site was from a rural elementary school in south central Pennsylvania. Of the 11 teachers invited to participate in a face-to-face interview, 10 participated. Seven out of the 10 participants were over 41 years old. Two of the participants ranged between 30 and 40 years old and one participant is between 25 and 30 years old. The majority of the participants had at least 20 years of experience teaching. The participants were asked seven interview questions to address research questions one and two and eight interview questions to address research question three.

Research Question 1: what are teachers' perceptions of technology usefulness in their classrooms?

Participants were asked seven interview questions to address research question one. Research question one showed outcomes that addressed the problem. Teachers' perceptions of technology usefulness was absorbed in the interview questions. Results showed that the technology devices provided by the school district and the tech ticket system put in place are

useful. Results also showed that the use of district technology devices show engagement and collaboration and are used for communication daily.

Codes were created from each research question. Those codes were then grouped into sub codes to themes were created from there. The codes that were created for research question one were *independent*, *interactive*, *tech ticket,* and *resources.* I used codes to connect and support the major theme within the smaller categories that emerged to answer research question one. After codes were created, themes were developed. All codes are useful in conducting the main theme. There were three main themes concluded for research question one.

Theme 1: All District Technology is Useful. The first theme that was present in research question one was that all of the technology devices provided by the school district were considered very useful to classroom teachers. All 10 participants found that all technology devices provided to them by the school district are useful. The technology devices that are provided to teachers include an iPad, MacBook, and Smartboard. When it came to the districts learning platform, SeeSaw, five teachers declared that See Saw is useful but they are not using it as much now that the pandemic is over. Interview E stated, “I only use See Saw for remote days.” Three participants said they don’t really use it anymore. Participant F shared, “I only use it for students and will sometimes post individual assignments on See Saw.” Having technology that is useful for teachers is important for teacher confidence and planning lessons for their students.

As useful as all the technology is to the teachers, one participant is struggling to use Google Mail. She knows it is useful but needs assistance using it. Participant C shared:

> Google Mail is useful because we use it every day to communicate. However, that is probably the biggest thing I feel I am extremely weak in. I’ve come from Microsoft Word

so I am still getting used to Google Mail. For some of us who don't come from that generation, so to speak, I don't know a whole lot. I am constantly accidentally archiving emails and they end up in the trash and then I can't get them back. It's been growing pains for me. I need more training on how to use it better and more effectively. The districts mail access and use is a topic area where teachers could use additional technology assistance.

One interview question that was designed to answer research question one, asked if teachers thought the school district's technology support system was useful. This system involves teachers submitting a technology ticket on the district's website if they are having a technology issue with one of their devices. Nine out of 10 participants found that the technology ticket system was useful for most of their technology issues. Seven out of the 10 participants shared that the technology department responds to their technology requests in a timely manner, within one or two days. Participant J did not find the tech ticket system useful because they do not know how to submit a tech ticket. They stated, "I would probably find it useful if I just knew how to submit a ticket. I was never shown." For the most part, teachers find the district's technology ticket useful, and it accommodates their technology needs in a timely manner. Making sure all staff members know how to use the system is important for teachers to get the most out of the system. This would allow teachers to use the technology ticket system more consistently.

Theme 2: Engagement/Collaboration and Communication. Theme 2 for Research Question 1 showed that the technology devices were used for student engagement and collaboration. Most teachers shared that they use their iPads to engage students independently during centers. Participant B shared, "I assign specific assignments based on the student's level

to their iPad so they can complete independently." All 10 participants shared that they use their smartboard for whole group engagement and collaboration. Participants A and B, further elaborated that they start their morning routine everyday with students at the carpet on the smartboard to get students engaged and excited. Participant A specifically shared, "I think our smartboard is very useful. We use it all the time because it is interactive for the teacher and the students. Students can touch it, and we can connect our computers to it and project things like the worksheets we are currently working on." Useful technology allows teachers to create interactive lessons for their students to be more engaged in their learning.

All 10 participants shared that they use the provided technology for communication to staff and parents every single day. This communication occurs via email and See Saw. Participant J shared, "I notice that when I communicate with parents via SeeSaw, I get a quicker response because SeeSaw is more like texting through an app." Overall, teachers found the technology devices (iPad and Smartboard) to be useful. Based on the data, the Smartboard is used more for whole group engagement and the iPad is used for more independent engagement. iPads are most certainly engaging for whole group as well.

Theme 3: Systems and Support. When asked if the participants found that the school districts technology system was supportive, nine out of the ten participants found that the districts tech ticket system is useful. Teachers shared that our technology department is useful when they have a technology problem that does not need fixed right away. As useful as the participants felt the technology ticket system is, six participants shared that there is no "in the moment" support or little to no elementary technology support. Participant C shared that "not having in the moment support is really holding us back. We used to have a technology person during Covid years, that was available to us immediately." Participant C shared they want a

technology leader back to assist them with personal technology growth to improve their teaching and learning abilities of their students. Participant J shared "I struggle with technology and when we had our tech person assigned to our building, she was amazing." Participant J added "I have to rely on my colleagues a lot because no one is available to me for in the moment technology support." To summarize, a technology leader in the district was very beneficial to teachers and they would like someone available to them to help other advance in certain technology areas.

Research Question 2: what are teachers' perceptions of technology ease of use in their classrooms?

Seven interview questions were asked to the participants to address research question two. The following subcodes emerged from research question 2, *easy, progress, practice,* and *in the moment support*. Participants were asked how easy it is for students and teachers to use their iPads, Smartboards, Google Mail, MacBook, and their learning platform (i.e.; SeeSaw). All 10 participants shared that the iPads provided by the district, and using SeeSaw were easy to use. Participant A shared, "since I have an iPhone for my personal cell phone use, I am familiar with using Apple products. That makes using the MacBook easier to use. But if you're not used to any of the Apple products prior to ever being given a MacBook, I don't think it would be easy for someone to make the transition to a MacBook." Nine out of 10 participants felt the smartboards were also easy to use. Participant B shared, "the Smartboard is easy for me and my students as we use it to hold our Morning Meeting every morning."

Codes were used to connect and support the major theme within the smaller categories that emerged to answer research question two. After codes were created, themes were developed. The two themes that addressed research question two was time and collaboration and systems and support.

Theme 1: Time and Collaboration. Participant B shared, "The technology devices are easy to use and I have gotten better over time as I continue to use them. What I need to improve with technology, is more time to research new ways to use the technology and more time to practice using the technology." Participant D shared that collaboration time with their colleagues to learn together would be a great use of their time. Two out of the 10 participants shared they are getting better and more comfortable and confident the more they use the technology. Participant H shared "the more time I spend practicing the technology, the easier it is to use in the classroom."

Theme 2: Systems and Support. All 10 participants reported that their Smartboard and iPads are simplistic to use. All 10 participants shared that their online learning platform (SeeSaw or Schoology) was easy to use. Eight of the 10 participants shared that their MacBook was easy to use. Five out of the 10 participants reported that Google Mail was not easy to use. Participant G shared, "The school district switched to Google Mail this school year and I am really struggling with how to use it. For example, my emails are getting lost and they can't locate them." Participant F shared they did not have ample training on using Google Mail and they have been left to figure it out as they use it.

Participants were asked what factors prevent them from using technology effectively. Lack of training and no "in the moment" support was mentioned by the participants. An example that was given by three participants of no "in the moment" support, is when the buildings Wi-Fi signal is not strong. Participant C shared, "When I am having technology trouble, there is no one available to me immediately and I am scrambling to figure it out on my own with a classroom of 25 students waiting for me. I always have a no technology back up plan." Participant J shared when they had a technology leader assigned to their building during

Covid, they would just pick up the phone and call them. The technology leader would come straight to their classroom to assist. Participant J stated, “We need a technology leader back.” It is evident that teachers really appreciated having a technology leader and would find it very beneficial to their success if they had a technology leader again.

When asked what factors are preventing them from using technology in the educational setting, participants shared that time to play with the technology and time to practice using the technology was hindering their knowledge of the technology. Also, not knowing all the features their devices have to offer prevent participants from successfully implementing technology in their classrooms. Participant D shared, “I feel like there is an easier way to do what I am doing. If I just knew all of the features my Smartboard had to offer, I would be using them.” Participant H and J both shared that they feel there is a lack of training and resources on using the technology devices provided by the school district.

***Research Question 3**: what are teachers’ perceptions of resources/support they need to use technology effectively in the classroom?*

Participants were asked seven interview regarding research question three. I used codes to connect and support the major theme within the smaller categories that emerged to answer research question one. The codes that emerged from research question three were needs/support/training, confidence, and tech ticket. After codes were created, themes were developed. All codes are useful in conducting the main theme. There were two themes that were developed to address research question three. Those themes included professional development and time/collaboration.

Five participants felt they are confident with the basic use of the technology devices provided by the district and are ready for additional technology training beyond the basics. Three

participants said they were somewhat confident using technology and could benefit from a "refresh" basic training again. Although it was evident that most participants felt confident, one participant shared, "I don't feel confident. There is more out there I could be doing if I knew what was available. I need more help using the devices and time to use it. Having someone available to help me would be best. I want to sign up for a one-on-one help." Getting a pulse on teachers' confidence level using the technology is important to know as you plan for additional technology training.

Theme 1: Professional Development. All 10 participants shared that they only received "basic" technology training on all of their devices provided by the school district. Therefore, all ten participants believe more professional learning is needed regarding their technology. The participants in the study indicated receptiveness to professional learning in several areas including additional features the technology devices have to offer, training with Google mail, and additional apps they could use and show students on the Smartboard. The teachers revealed that in addition to professional development opportunities, they would like to have an in-house support person like they used to have during the pandemic. All participants shared this was a resource they took advantage of for personal technology growth. Also, four participants shared they want the technology department to provide them with technology videos to watch over the summer. This opportunity was provided to them during Covid and they found this to be very beneficial for their success utilizing technology in the classroom. Participant I stated, "The summer videos were great for me because I could watch them on my own time and go at my own pace." Participant J shared, "I could start and stop the videos and practice the new skill at my own pace. Unfortunately, this opportunity has not been offered since Covid." Participant G stated:

> It would be pleasant to be able to settle in and spend time learning more about the technology I have. The best time would be during a professional development session. It would be nice to use our own teachers and staff who are experts in certain technology areas to share with us what they know. They could provide us time to work on the certain area we needed, and walk around and help us. To take the need for training even further, I think we should have a refresher professional development in the middle of the year to touch base to see where teachers are and how they are feeling with using technology in the classroom. They could send out a survey prior to the professional development session to see how people are feeling at that time and see what their needs are. The technology devices are just so expensive, and I feel we are using it minimally. Not that many people know how to use it well. Providing teachers with a survey is a great way to receive technology feedback for future technology trainings.

In summary, evidence from the above participant statements suggests that time together with colleagues would be helpful. Teachers want time to collaborate with others and discuss technology ideas they are using in their classroom. A refresher mid school year is also being suggested as a check-in on where they are with their technology.

Theme 2: Time/Collaboration. The results from this study showed that participants are eager to learn more about their technology devices. However, they want and need the actual time to learn, work with colleagues, and play with the technology. All 10 participants stated that the best time to receive more technology training would be during their prep time or during scheduled district professional development time. Participant G said, “This time would provide an opportunity to enhance our teaching for our students.” Participant D shared, “I do not currently feel confident using technology. However, when they had a technology leader, I felt

"extremely confident" because they were available to me as I needed them." Participant D shared, "I would like a technology leader assigned to my building to help me when needed." In summary, all participants shared they want more time to work with technology during scheduled professional development time. In addition to time, participants shared they would benefit from having a technology person to assist them in their technology needs.

Two key outcomes in this study were the indication by all teachers who responded that they could benefit from more technology-focused professional development and provided with more time with the technology, within their contract, to learn and educate themselves on how to best use the technology. All 10 participants thought that the use of the district provided technology devices was easy. However, eight teachers indicated that there is no "in the moment support" and they would prefer to have a technology person brought back to the district to assist them with their technology needs. During COVID, the school district provided each building with a technology teacher to assist them with any technology needs. All participants found this technology teacher to be very beneficial to them.

Participant H stated, "I liked when we had our technology person. She was our go to during Covid and she was specifically assigned to teachers and now we don't have access to her anymore. It was nice to turn to her for a solution and get her thoughts on new technology I wanted to implement in my classroom." Participant H also shared, "I would like to have more trainings and receive knowledge on what more I can do with my Smartboard now that I have had it for a while. I need a review of the basics. When they first provided basic training, it was nice to get me started and know how to turn on the board but I wasn't comfortable and confident at that time to use the ideas they shared. Now, I feel I am more comfortable and ready now that I know how to navigate my Smartboard."

Patterns, Relationships and Themes

Overall, the study respondents provided insight on their perceived usefulness of technology in their classroom (Research Question 1), teachers of technology ease of use (Research Question 2), and resources/support teachers need to use technology effectively (Research Question 3). The themes that emerged were linked to technology effectiveness and technology training. Participants were asked about their technology usefulness which is displayed in Table 4. All 10 survey respondents indicated that the technology devices provided to them by the school district were useful.

Table 4

Are there any technology tools you find are not very useful in your classroom?

Useful
iPads
Smartboard
Google Mail
MacBook

All participants said that all technology devices offered by the school district were easy to use. Participants were then asked about the ease of use when it comes to using the technology provided to them. Those results were displayed in Table 5.

Table 5

Easy to use
iPads
Smartboard

MacBook

All participants indicated that the iPads, Smartboard, and MacBooks are easy to use. However, five out of the ten participants felt that Google Mail was not easy to use, and they have had little to no training in Google Mail.

It is evident that participants are looking for additional training opportunities to learn new technology and want the time to work with their colleagues. All ten survey respondents expressed a need for additional technology training and weighed in with more detail on what they are looking for to help them improve their classroom. When participants were questioned what technology training they have had, all 10 participants responded that they remember receiving quick training that was minimal to review basic use of the technology. For example, how to turn on your Smartboard, how to compose an email, and how to update your MacBook. Under the theme training, there were a few codes that emerged. One code included time. Participants were asked when would be the best time to receive support in using the technology. All ten participants said during a professional development day or during their planning time. Five out of the ten participants shared they would appreciate scheduled time to talk with their colleagues about how they are using the technology in their classroom.

Teacher technology needs was a sub code that emerged. All participants shared the need for more technology training in order to expand their personal technology growth. Some teachers are looking for basic training again and more than half of the teachers are ready to take their technology devises to the next level. One teacher would like to be trained in Google slides and another teacher mentioned wanting to implement more apps to their students but not knowing what was out there.

The theme for technology systems/supports includes technology supports that the school district has or does not have for teachers. All ten participants mentioned the technology ticket system that the school district uses. Teachers complete a technology help ticket online and within 1-2 days the technology department comes to your classroom to fix it. All participants shared that the turnaround time is quick. However, when teachers or students are "in the moment" with a technology problem, there is nobody available to help. As previously mentioned, the school district used to have a technology person who teachers could meet with to expand their technology use in the classroom. This is something that all ten participants are looking for so they can learn the new and engaging ways to include technology into their lessons. Participants shared that they currently learn on their own by going to Google or asking their colleagues.

Participants were asked if they felt confident using technology in their classroom. Participants were split on how confident they feel. Half of the participants felt they were confident using the technology. Three of the participants felt somewhat confident and two participants shared they do not feel self-assured when utilizing the technology. One of the participants that does not feel secure of oneself when using the technology shared that she did feel more confident during COVID when the district provided a technology teacher to each building. The study findings suggest ways in which the school district could help teachers strengthen the technology barriers they experience in the classroom.

Discrepant Cases

Discrepant cases are instances in the data collection that oppose, differ, or vary from the data analyzed in the identified patterns and themes. Any potentially discrepant or special data was compared to the surfaced views or themes. Weighed in relation to the total data analyzed, the discrepant data were considered as to what the more unique responses might suggest or

reveal in the school context for this study. Cases were reviewed and analyzed considering whether the backgrounds of the teachers responding and the classroom context were unique when compared with others in the participating respondent pool. Some responses from participants had to be weighed differently. One teacher taught more than one grade at a time and more than one subject at a time, as she is a learning support teacher. Another teacher is a specials teacher who teaches digital art so she is at an advantage when it comes to utilizing technology in her classroom. Both cases provided valuable data and were noted and considered unique or discrepant from the rest of the data.

Another discrepant case was a teacher who expressed feelings of being overwhelmed by the dynamics of her classroom. This teacher was not able to use her smartboard for most of the school year due to student behavior. That teacher acknowledged in the interview that she "has never had a class makeup like this with so many behaviors." This teacher also did not teach during the pandemic due to taking medical leave. She did not receive any of the technology training while she was out and did not use Seesaw during this time.

Evidence of Quality

In order to get a true representation of teachers' perceptions of technology use post pandemic, this study established trustworthiness through an approved interview protocol. Face-to-face interviews were transcribed over Zoom. This provided written record of all responses. An email with the transcribed interview was sent to participants within seven days. This provided a written electronic record of the responses. As responses were collected, I kept written notes of points made and began to analyze for codes and alignment of patterns and themes. A coding system, Delve, was also used to house all transcribed interviews. Delve easily allowed for common themes and patterns to be recognized as I sorted through the data.

The data analysis included the opportunity for member checking by emailing the individual respondents' data, requesting feedback for any misrepresentation for the participants' interview response. The reason for this member checking opportunity was to check for the credibility of the interview data analysis, keeping the results aligned with the participant input. No outside experts were asked to analyze the data. Member checking validates the accuracy of the interview data to ensure a true representation of teachers' perceptions of technology use.

Summary of Outcomes

Section 2 showcased a detailed description of the qualitative methodology, research design and approach, participants, data collection, data analysis procedures, and limitations. Results of the study were also shared. The basic qualitative approach was selected as the most appropriate for this study to understand and learn how elementary teachers perceived technology in their classroom post pandemic. The research questions guiding this study were explored to facilitate how teachers perceived technology in their classroom.

This literature review demonstrated the need for the proposed study by demonstrating the value of examining teachers' perceptions of technology use in the educational setting. The outcomes revealed several areas of alignment with the literature review and most importantly with the theoretical base serving as support for the project study. The theme of *technology effectiveness* was evident in the project study data and in the literature review. Further, the theme related to technology acceptance model (TAM), based on the work of Davis (1989), showed perceived *usefulness* PU and *perceived ease of use* PEOU were evident in this study. Davis (1989) explained that PEOU would increase usage by educators in their classroom if external factors such as school leaders, colleagues, and constant technologic support were present. Technology integration is considered the external variable (attitude toward use, intention to use,

and actual use). This was evident in the study data as participants shared a desire to have a technology staff member available to assist them with their technology needs. Teachers' experiences were explored toward their PU and PEOU in terms of technology after the pandemic and how it may have influenced user acceptance.

The themes emerging from the findings in this study gathered through the face-to-face interviews showed alignment with the theoretical framework through the in-person interviews. During the interviews, themes related to the research problem surfaced. Consistent with the work of Cheok et al. (2017) an individual's approval of technology was based on their perceptions of whether the technology or innovation is easy to use or useful. Teachers choose which technology to use in their classroom and when to utilize the technology with their students. Many participants shared they feel there is more out there they could be doing with their students if they were aware of all the features each of their devices have to offer. The interview data from the study findings also showed evidence that teacher's attitude toward technology use relates to teachers' intention for technology use (Teo et al., 2015). The participants that were not very confident using the technology discovered that the technology to be harder to use and harder to learn without the support of a technology teacher.

Section 3 will introduce the project-based findings from the research. Project goals, rationale, literature review, project description, project evaluation scheme, and project implications are presented. Section 4 will contain reflections and guidelines for future research, followed by the conclusions of this doctoral project study.

Project Based Outcome

The findings of this project study research yielded some useful data in order to plan a project. Because of the small population and sample size anticipated, the face-to-face interview

provided collective data. The interviews allowed me to gain information and perspective on the research questions, which were related to perceived technology usefulness, ease of use, and what resources/support teachers need. Participants reported the need for more professional development in relation to refresher of the basics and what additional features each device has to offer. The theme also emerged related to the need for an in-house technology person to allow the means for daily and continuous professional learning and collaboration. Based on the findings, the proposed project would fall in the genre of professional development.

Because the project study research showed a preference for differentiated professional development, the project would include a one-day back to school professional development project including multiple workshops to address each teacher's technology needs. However, that would only be a portion of the in-person professional growth. Due to teachers expressing the lack of time to learn new technology skills, in addition to topic-based workshops, a video warehouse will also be a part of the professional development blueprint. The plan would also include two half day professional development workshops throughout the school year. This will allow teachers to continue learning technology on their own time and with their colleagues as the school year goes on. Finally, the project would incorporate collaboration using our technology department and district teachers who have confidence in certain areas/topics of technology. In the next section, the proposed project will be described in depth.

Section 3: The Project

Introduction

This section describes the project that was developed, along with the project goals, resources, supports, potential barriers, and solutions, implications and timetable, responsibilities,

and evaluation plan. I chose professional development as a project to address the experiences participants faced with using technology after the pandemic. All participants from my study addressed the need for continuous development and support. The professional development project was developed as additional training, which can be used by administrators, instructional learning teams, and teachers, since the project focused on the experiences participants had using technology throughout the classroom after the pandemic.

Participants reported overall challenges with (a) lack of training (b) need for additional technology resources (c) desire to have a technology person available to them, and (d) time to learn with colleagues. Teachers faced challenges when operating technology in the classroom when they were not trained on the specific technology. Consequently, this promoted the need to concentrate on challenges as the focal point of the project. Examples of the challenges are as follows: Participant D shared, “I do not currently feel confident using technology.” Participant G stated, “It would be beneficial to have the opportunity to sit down and spend time learning more about the technology I have. The technology devices are just so expensive, and I feel we are using it minimally. Not that many people know how to use it well.” Participant H also shared, “I would like to have more trainings and receive knowledge on what more I can do with my Smartboard now that I have had it for a while.”

To summarize, this project was developed based on the overall experiences that the participants found with using technology post pandemic. This project is an effort to help teachers feel more comfortable using technology in their classrooms with their students. Evidence that this project should be based on professional development were the technology experiences and needs based on each participant, lack of training provided to participants, the additional

resources available, and time to work with and learn new technology skills as these were the major experiences with using the technology in the classroom.

Rationale

I chose professional development for the project study based upon the problem and the research questions. The research questions probed what teachers needed to be more effective using technology in the classroom. The research was conducted from a school district where all students have their own iPad and all teachers have their own Mac products (i.e., iPad and laptop). The technology products provided are to be utilized for classroom instruction as well as engagement with students. While the school district provides initial technology training and resources on the technology devices, the findings suggest a deeper technology training be provided for teachers. Study findings show the need for continual technology training beyond the basics. Requests by participants also include providing them with a technology person to be available (like they had during the pandemic) to assist them with technology in the classroom. Professional development based on the research findings from this study will assist administrators and teachers with an understanding of the challenges faced with technological usage in the classroom. In addition, administrators and educators can use this 3-day professional development project as a guide for technology use at their schools and classrooms.

Review of the Literature

Professional development was aligned with the problem for this study, which was directly related to professional learning and teacher preparation needs for using technology in the classroom. Many participants are looking for additional professional development on their technology devices. All participants shared they would like a re-fresher on the technology and some participants are ready for “beyond the basics” training. In addition, many participants

addressed the need for continuous development and support. The literature reviewed in this section corresponds to the findings supporting teacher training to assist educators in technology use in the classroom.

The purpose of the project is to provide professional learning opportunities for teachers to strengthen their knowledge and confidence of technology use in the educational environment. The project plan will be held over a 3-day period. As researchers have noted, planning for more than one session is critical (Snyder et al., 2018). The project plan will have two expectations. First, with formal professional development opportunities, participating teachers can feel more confident using technology throughout the classroom when engaging with their students. For them to feel more confident, they need to be trained properly on the technology and need time to practice using the technology. Karlberg and Bezzina (2022) noted that experienced teachers felt less confident than beginning teachers when educating gifted children. Second, with continuous support from the school district, the technology department, and teachers with knowledge using technology in the classroom, can assist participating teachers in strengthening their technology skills which will lead to increased student engagement. Inherent in the term professional development is the perspective that learning should happen in steps to allow for new views and new skills to evolve (Snyder et al., 2018).

I conducted the literature search using multiple databases, limiting the search to peer reviewed journals within the last five years using ERIC, Google Scholar, EBSCO, and SAGE publications databases. The search phrases included *professional development, technology, pandemic, and factors associated with teachers' technology use in the classroom.*

Technology is a imperative factor affecting education today. Schools are insisted to use technology to promote the education of students. Since the pandemic, teachers continue to use

technology in their classroom. However, challenges have been identified such as access to tech-support employee, access to resources training, a variety of technology skill levels from teachers, technology training, and technology support. This can make it challenging to integrate technology in the educational setting for student engagement.

Due to the government shutting down schools from the Covid-19 pandemic, teachers' methods of teaching and the delivery of instruction altered dramatically. The aftermath of the pandemic is still affecting teachers in the classroom today. Over the last 10 years, with the growth of technology-assisted learning, educators have had to start utilizing online learning platforms to advance self-directed understanding and assessment in students (Kumar et al., 2021). Participants in the study shared that they are required to use SeeSaw as their online learning platform. Today, this platform is used for many different reasons, for example when students are absent, when students leave early for a doctor's appointment, when students are on a temporary medical leave, or when weather conditions dictate a remote learning day. Poverty has also been affected as the aftermath of the pandemic. Poverty and the shortage of access to online are crucial obstacles to dealing with the COVID-19 pandemic (Alijani, 2020).

Change is generally applied at a small pace, testing what is effective and what is not work. However, the rate of speed required to respond to the pandemic did not allow for the slow and stable approach. Many teachers who reported to have minimal to absent training in technology were faced with an enormous change in the practice and a radical change in student learning (Winter et al., 2020). An example of the radical shift in student learning is the quantity of learning that was lost by students. The responsibility of this learning loss is put on teachers to fill the gaps. This mislaying will affect under privileged children more being that they may not have had access to technology including the Internet to utilize its online features (Willis, 2020).

A relationship between the teacher's skill level with technology, and how well they adapt the technology, and professional development training for the successful integration of new technology is imperative (Winter et al., 2020). Darling-Hammond and Hyler (2020) mentioned that the COVID-19 pandemic brought an unanticipated mix of online, hybrid, and in-person learning. The mix of teacher instruction was noticeable in each teacher's ability to use technology in students learning during the pandemic. According to Trust and Whalen (2020), "the global pandemic revealed a significant educator preparation and training gap for emergency remote teaching" (p. 189). The global pandemic revealed a major gap in teacher readiness and training for teaching with technology (Trust & Whalen, 2020). These gaps have led to differences in teacher's confidence and skill level for implementing technology into the classroom. If educators have not had adequate instruction and coaching in technology, obligatory skills would be a shortball.

According to Organisation for Economic Co-operation and Development (OECD)Teaching and Learning International Survey, 40% of teachers had zero amount of professional development in technology usage and almost 20% saw a raised need for hands on training (Ainley and Carstens, 2018). Younger teachers and educators who had in-service training used technology more often than older colleagues. The National Literacy Trust (Picton, 2019) discovered that most teachers were in support of using technology but expressed minimal amounts of training as the greatest barrier. Per the research, training is paramount if teachers are able to integrate technology without issue. Graafland (2018) believes teachers should understand how and when to utilize the technology which, when used correctly, is an imperative tool in the classroom. The teachers' levels of technology skills and capacities to adapt to using the technology are essential for success.

To start off the 3-day professional development session, teachers will need a reboot technology training around the current technology they are using. This will be the first step of the project study. Studies found that professional development allowing for step progression in learning was more effective than a single workshop and allowed for differentiation according to teachers' needs (Snyder et al., 2018). The reboot will be based on the technology devices the school district provides the teachers: iPad, MacBook, and Smartboard. Addressing this as the first step of the professional development session will better prepare teachers in technology usage in the classroom with the variety of skill level per teacher with technology among teachers, this reboot will allow all employees to have the same level of training. This literature review concentrates on topics related to technology use in the classroom.

Confidence/Knowledge

Technology in the classroom cannot be effective without educators who understand both the technology itself as well as its fulfillment to achieve expectations in an educational setting. While technology itself is growing, improving learning via its utilization should remain the goal (DeCoito & Richardson, 2018). Karlberg and Bezzina (2022) studied the professional development desires of beginning and seasoned teachers, concluding that "classrooms are becoming more diverse, identifying special education, technology-based learning, handling behavior worries, and teaching migrant students as the four main areas revealing the changes" (p.638).

According to Darling-Hammond and Oakes (2019), the expectations for more in depth learning with improved equity since the pandemic have raised the expectations for educators and for teacher preparation. This is crucially vital that current educators be supported in meeting challenges that they endure and be given the opportunity to be trained using technology in the

classroom. Educators need to be increasingly well rounded about how to incorporate authentic and worthwhile learning, so students are attentive and learning in ways mandated by the complexities of current life (Darling-Hammond & Oakes, 2019). According to Caena and Redecker (2019), teachers must be competent in technology to confront the 21st-century challenges to best empower 21st century learners.

A barrier during the pandemic that is still affecting teachers and school districts today is teachers' technology confidence levels. School districts want staff who feel encouraged in teaching while using technology and want students who feel self-assured in learning while using the technology. Because teachers had to conform to a reformed way of teaching with no training and experience, teachers' confidence levels dropped when it came to using technology in their classrooms. According to Alexander et al. (2019), this can be problematic because of the large achievement void connecting staff and their students who are able to function in a digital atmosphere and those who are deficient in the skills.

To breakdown hesitance of using technology within the classroom and to build their confidence level, educational systems should provide teachers with the essential equipment in addition to supporting their skillset and knowledge base with the swift growth of technologies. The 3-day professional development training sessions will provide teachers with the technology knowledge that they need and assist them in using the technology in the classrooms with their students. DeCoito and Richardson (2018) state, "Technology is unable to be effective in the educational setting without teachers who are informed in technology and its implementation" (p. 362).

Incorporate Technology

The digital world has manipulated the way people play, gain information, communicate, and grow intellectually. Young individuals currently are more connected today utilizing the Internet and technology with a immense increase in digital use among youth up to eight years of age (Schleicher, 2019). Current research displays that 52% of 3–4-year-olds and 82% of 5–7-year-olds are virtual (Ofcom, 2019). These students are currently involved with technology which creates availability for teachers to blend technology into their classroom. Understanding the way and the reason electronic learning is used is important because educators and educational families use devices to make informed decisions regarding technology use in childhood and young adults (Gottschalk, 2019). This emphasizes the desire for teachers to be capable to use technology with confidence in an effective manner. The type of technology and what it is used for in the classroom is important for student success. Caena and Redecker (2019) state, "In many cases, educators are unsure about how digital technologies could be integrated into education" (p. 361).

Research at the Massachusetts Institute of Technology discusses that student's brain involvement while listening to a teacher lecture in the classroom dips while sleeping. The use of teaching and using technology in the educational environment can have an impact on students and their ability to retain what they learn. Understanding how and why technology is used is necessary to help educators make educated decisions on technology use while in the classroom (Gottschalk, 2019). It is the teacher's responsibility to establish positive environments and opportunities for dense learning experiences using technology. Teaching strategies have to improve, and so do the competencies teachers require to develop that tackle 21st century skills and challenges. Establishing the requirements of educational professionals by educator competence frameworks can provide diverse reason at numerous levels in the educational

systems. At the minimum, it can reinforce and navigate teachers' practices and ongoing professional development (Caena & Redecker, 2019). This is more reason to provide educators with technology-focused professional development trainings and sessions, so they feel prepared and confident in using the technology in their classrooms.

Collaboration

An impactful part of the professional development session will include a technology collaboration time with colleagues. This was a request of all interviewed participants. Research has found that professional collaboration and time to work together is associated with growing career satisfaction, self-efficacy, and the gain of innovative practices (OECD, 2018). Collaboration is tiered by teachers as one variables for their understanding and retention in this field of profession. Research shows that those who take part in collegial work environments are effective when they expand personal growth (Darling-Hammond & Hyler, 2020).

Being an educator in the 21st century composes new challenges for teachers, especially in the grading of young learners and even more so in growth development (Griffin & Care, 2014). However, problem-solving together will assist in understanding challenges, which require large-scale change, coupled with the resilience of educators and attention to countined education. The OECD's PISA survey gauged collaborative problem-solving, conceptualized as the ability to take part in the agents attempt to solve a problem and find a solution. Collaborative problem-solving is looked at as stemming from critical thinking, problem-solving, as well as decision making, and collaboration (Griffin & Care, 2014).

Due to the pandemic, it is apparent even more that educators need to collaborate and work together to overcome challenges in their classrooms. Veteran teachers are stepping up and providing mentoring and support for fellow educators, including new teachers (Bailey & Schurz,

2020). Fresh teachers whose student-teaching was disrupted by COVID-19 in the first half of 2020 need additional collaboration support as they share their careers, but they can also bring vantage points and practices formed from their experiences, including an acute awareness of the equity challenges raised by the pandemic (California Commission on Teacher Credentialing, 2020). It is imperative that collaboration time is built in for educators today. The 2018 TALIS survey showed that almost 47% of lower secondary educators frequently meet and exchange educational materials, and as low as 9% had the chance to routinely observe colleagues and provide feedback. Fewer than 60% of school leaders reported taking consistent action to support collaboration among educators to develop new teaching practices.

To ensure continuity of learning and to support learners, educators ought be "fluent users of technology; both creative and collaborative problem solvers: while being able to adapt throughout their careers" (US Department of Educational Technology 2016, p. 34). At the end of the professional development session, teachers will reflect on their technology utilization in the classroom. Kuk and Holst (2018) note that reflection is a big element to adult learning theory. Several researchers found evidence that professional learning planned to allow teachers time for reflection and inquiry is effective in professional development practices (Greenleaf et al., 2018).

Future Technology Support

As a conclusion of the professional development sessions, teachers will gain the following: a clear understanding of where to find technology resources, tips, and tricks, along with help as they continue throughout the school year. An online HUB will be created for teachers with easy access to resources which will act as an ongoing, online professional development. Snyder et al. (2018) found that professional development had much more impact if the plan went beyond a workshop or workshops. Bragg et al. (2021) suggest that "virtual

professional development for educators positively impacts their lessons and educators' knowledge base; pedagogical content; beliefs towards teaching; self-efficacy; and practices for instruction, is well-timed and immensely relevant" (p. 1).

The COVID-19 global outbreak exposed an immense variation in educators' preparation to utilize technology to assist learners. While educators who used technology often in their everyday teaching found remote teaching to be easier, most teachers seemed to be "building the plane while flying it." Darling-Hammond and Hyler (2020) mention that the COVID-19 pandemic brought an unexpected stir of online, hybrid, and in-person directions. This mix was noticeable in each teacher's ability to use technology and is still affecting teachers today as they navigate the changes technology in the classroom has brought. Trust and Whalen (2020) indicate that "the global pandemic revealed a major educator preparation and training gap" (p.189).

The deficiency of preparation, training, and guidance the participants had with designing quality instruction regarding technology created extra stressors and barriers that they are still trying to recover from today. All participants from this study shared that having a technology expert available to assist them is crucial for their success in the classroom. While the utilization of technology for in-person, distant, and remote education has been transpiring since the early 1980s (US Department of Education, 1996a), the worldwide closure of schools at the hands of the 2020 COVID-19 outbreak seemed to stain the community in the education world, with numerous teachers muddling to fathom how to change their pedagogy to "emergency virtual teaching" (Hodges et al., 2020, para. 5). It is important to listen to and reflect on what the participants are asking for so that school districts can better train and support educators in order for them to feel confident using technology in the classroom while meeting the 21st-century education demands.

The findings of the literature review provided guidance on developing the project in the following areas: re-fresh technology training, expand technology training in teacher-specific areas, and provide time to collaborate with colleagues using technology. For purposeful learning to flourish, teachers need to be effective lifelong learners not just individually, but also as one.

Project Description

Based on the findings from the study as well as the literature review on professional development, the project target for professional development was created toward helping teachers using technology effectively in the educational platform. Professional development in technology use is essential to assist teachers in using the technology with their students in their classrooms. Additionally, professional development on technology use in the classroom can create an upward trajectory for student academic success.

The 3-day professional development project aims to ensure that educators are comfortable using technology in their classrooms and that they understand how to use it in their classrooms. The goals are to assess the technology level of each teacher and to provide resources for each teacher when using technology throughout the classroom. The professional development sessions will focus on gauging where teachers currently are with using technology, assisting teachers with ways to utilize technology in the classroom, and finding additional technology resources.

The professional development sessions will be run by administrators, technology leaders, and instructional team leaders at their schools. The targeted audience for the professional development sessions is elementary teachers. Day 1 Session 1 (morning session) will include the findings of this project and the experiences teachers encountered while using technology in the classroom post pandemic. Additionally, during this session, the presenters will get an idea of

teachers' confidence levels using technology in their classrooms. Day 1 Session 2 (afternoon session) will include a reboot technology training tailored to their individual needs. Day 2 Session 1 & 2 (morning and afternoon) will include technology training in specific areas of need. Teachers will get to choose which sessions are best for them. Day 3 Session 1 (morning) will include new and engaging ways to integrate technology further into the classroom and Day 2 Session 2 (afternoon) will include collaboration time to work with colleagues on technology implementation in the classroom. In addition, participants were clear they wanted an opportunity for continuous learning. Therefore, a technology HUB will be created for teachers to have as a resource throughout their school calendar year. This will then be a place where all technology-related questions and resources will be housed.

Project Evaluation Plan

Project evaluation is imperative to monitor and track the effectiveness of the professional development project. This researcher will evaluate the professional development goals and project upon completion and review with the superintendent. Staff will be requested to complete a survey concluding the 3-day professional development that will monitor and measure the effectiveness of the PD project. School administrators can monitor changes and provide feedback for improving the PD project. The results from the survey will be reviewed and used for additional technology-focused professional development in the middle as well as end of the school year. The goal of the survey is to get a picture of how the PD session went and if teachers' technology needs were met.

Project Implications

The 3-day professional development sessions will benefit elementary educators as they will gain confidence and knowledge of additional ways to successfully utilize technology in the

classroom. Educators will also benefit from opportunities to practice integrating technology with colleagues during the 3-day PD sessions. Best teaching practices and strategies suggested by veteran teachers will also benefit participants as they can apply them to everyday classroom instruction. The findings from this research will benefit teachers with the knowledge that will help improve their classroom instruction and student engagement.

The results from this study can be practical by administrators, superintendents, technology leaders, and instructional leaders with decision-making practices to support elementary educators in technology use in the classroom. These findings can also be used to offer educators more professional development opportunities to gain confidence in using the technology. As teachers gain more confidence, student engagement should increase.

This project was developed as a solution to the research question. It was based on the challenges teachers faced while using technology in the classroom. The positive social change resulting from these findings can help other educators technological use in the classroom with the potential to increase student engagement. In addition, educators can take best practices learned and incorporate that into their daily routine and teaching. Another opportunity for supporting positive social change is by providing district leaders a cohesive technology staff training schedule to ensure all staff are trained properly. Teacher confidence and positive staff experiences using their technology could create a positive environment and climate for student engagement.

Summary

Based on the results of this study, a 3-day professional project was created. A description of the PD project, goals, rationale, implementation, evaluation plan, and implications were presented. Section 4 presents the projects peaks and valleys, recommendations for alternative

opportunities, scholarship, project development, and evaluation. Section 4 concludes with reflections, leadership and change, implications, applications, and directions for research in the future.

Section 4: Reflections and Conclusions

Section 4 includes a review of the study and presents the project's strengths, limitations, recommendations, evaluation, reflection, and directions for the future research. The findings from the data analysis served as a guide in the development of the 3-day professional development project study, which provided a solution to the research question and produced research-based best practices around teachers who faced challenges with technology. The findings can potentially assist administration, the technology department, and educators with valuable information regarding the usage of technology inside the classroom. Students will benefit from improved instruction, engagement, and overall academic achievement.

Project Strengths and Limitations

The rationale of this study was to investigate teachers' experiences of utilizing technology in the classroom. Findings from this project study provide information on technology use, based on the experiences teachers encountered post pandemic. The 3-day project study was developed based on the themes that stemmed from the research questions during data analysis. Themes that emerged from this research study are engagement/collaboration, systems and support, time and collaboration, and professional development.

A project strength, I believe, is that it addresses the need for professional learning opportunities as perceived by the educators in the local school. Furthermore, the project plan includes guidance from both the findings and from the professional development literature on effective practice (Snyder et al., 2018). The 3-day professional development sessions are

learning opportunities that build upon the study's school district's mission and vision statement of students becoming contributing citizens in an ever-changing world. Educators attending these professional development sessions will acquire knowledge on based on best practices integrating technology into the classroom. During these professional development sessions, teachers will have opportunities to get a refresher on their knowledge of the current technology, gain additional knowledge of new technology use in the classroom, collaborate with their colleagues, and apply new knowledge to their technology devices.

This professional development project was created as a solution generated from researching the problem of how urban K-5 elementary teachers integrated technology in the classroom. This project study was developed to assist teachers in technology implementation in the classroom to keep up with the ever-changing world. The intention of this study was intended on professional growth for teacher participants at the urban study site, but it was also developed so that any administrator, technology department staff member, and teacher leader can use this project as professional development training when integrating technology into the classroom. Administrators can also use this professional development session to access the technology skill level of each teacher and offer more technology learning opportunities.

Challenges with time to learn and practice new technology are presented, and best practices and strategies are shared as solutions. I am confident that the professional development session created contains time for teachers to collaborate and use the technology. For teachers to feel more confident in using the technology in the classroom, they will need additional support beyond the 3-day professional development session. I have laid out that support as a resource for administrators and staff within the technology department.

Recommendations for Alternative Approaches

The essence of this professional development project study was to share knowledge on how to integrate technology into the classroom. An alternative approach would include additional learning opportunities during regularly scheduled staff meetings and trainings. At these staff meetings and as part of a collaborative community, teachers can discuss and share what technology instruction is working for them and share how they used what was learned during the meetings. Along with scheduling additional meetings, a HUB was created as a one stop shop to find all technology-related questions and resources. Another alternative would be peer observations. Teachers could take turns observing each other, leave positive feedback, offer teaching strategies, and assist with technology use in the classroom.

Scholarship, Project Development, and Leadership and Change

Guidance from the findings of the study, both literature reviews, and the conceptual base informed the project as the foundational basis for me in the development of the research project. Based on the findings from the study, professional development was the logical choice for the project genre. While conducting this study, I gained knowledge on how teachers use technology post pandemic, how the school district technology systems and support is organized, how teachers solve challenges while utilizing technology in the classroom, and how educators and the technology department communicate when it comes to technology use. I can apply this knowledge in my professional role as an educator. It was clear that teachers wanted a reboot of training, more time and collaboration to work with the technology, and a beyond-the-basic's technology training. The teachers are eager and willing to learn if they have the time and proper resources to do so.

The school district and other schools will benefit from the findings and the professional development sessions pertaining to this study. While conducting this project study, I also acquired knowledge in data collection, data analysis, presenting findings, and formulating a project. Summative evaluations will be applied to evaluate the 3-day professional development sessions while project evaluations will be used to evaluate the effectiveness of the professional development session. At the end of each professional development session, evaluations will be completed by the teachers in attendance. Feedback from stakeholders will facilitate adjustments to the information given in the professional development sessions.

As an assistant principal in the same school district as the project study, I strive to learn new ways to present and apply new knowledge to guide teachers, enabling them to better improve classroom instruction and academics and to increase student motivation. Educators are expected to use more technology to impact classroom instruction, so it is imperative to expected how to use innovative technology and digital programs. Not only that, but it is important that teachers feel confident using the technology before teaching it to their students. All new teachers to the school district, are provided opportunities for mentoring among colleagues. I plan to mentor colleagues and share experiences and strategies on increasing technology skills, finding resources as they navigate through the new technology, and successfully integrating technology use throughout classroom. In addition, I will update the professional development based on feedback provided by teachers in attendance. Finally, as an educator and researcher, I have learned how to apply the 3-day professional development sessions to various educational settings.

Reflection on the Importance of the Work

My doctoral experience has taught me how to be dedicated, how to manage my time, and how to persevere when it seemed never ending. Now that I am at this point in the process, I feel proud and fulfilled. This doctoral journey positively affects my future educator, researcher, and leadership endeavors. Even though this work was targeted on a small scale, a case study of teacher needs, the lesson from the research and aligned development of a project was important. My doctorial work taught me to take one step at a time, to be patient, and to stay consistent. I learned the value of the research process as a base and framework for planning, how to develop a research problem and research questions, how to develop themes, and how to create a meaningful project study. I revised the 3-day PD sessions various times to align with the findings. Although it was time-consuming to plan the professional development sessions, the experience allowed me to grow as a project developer. In addition, I came to recognize that teachers, who are professional learners, have a very sound concept of what will work for them in learning if you listen. As I approach the end of this journey, I realize how much I have grown as a writer and researcher in ways that will enable me to help other colleagues.

Implications, Applications, and Directions for Future Research

The rationale of this study identified the challenges and barriers teachers faced while using technology in the classroom. As a researcher conducting this qualitative study after the Covid-19 pandemic, this study has potential influence for positive social change. The research showcased the overall need for additional and continual professional development to provide support for teachers as technology use continues to be a vital part of the student's school day. After the professional development sessions, individual teachers can gain confidence from learning, collaborating, and practicing additional technology information. Social change occurs

when teachers feel more comfortable teaching with technology in their classroom. Through this research study, social change is promoted by granting additional time to collaborate and create interactive lesson plans taught throughout the entire school year. Additionally, students will gain engagement in their learning which will ultimately help the school district show positive social change with a positive school culture and possibly raised test scores. The potential of improved teacher and student performance is an impact that should be witnessed in the future.

This study was done from one of four elementary school buildings. This study could be replicated to include more teachers, additional schools in the same school district, various educational settings, or additional schools as a comparison between schools in the county or across the state. Additionally, the research study focused on elementary school. This study could be conducted to focus on middle and high school buildings as well. Furthermore, a study involving how teachers integrate technology to include special need students could also be of interest. A study utilizing all teachers at the school district would provide a greater understanding of the difficulties and experiences that teachers faced in the educational setting when using technology. If the world were to enter another pandemic situation, it would be interesting to see how teachers would experience using technology compared to the 2020 pandemic.

Recommendations for future research exploration can include a case study on the effects of technology use and teacher confidence and technology use and student engagement. Also, future research could investigate school district technology support services and teacher satisfaction. It is imperative that school districts are keeping up to date regarding the technology use rate in today's ever-changing world. Social and emotional learning can be an additional element for future research for both the teachers and students as they navigate the changes of technology post pandemic.

Conclusion

The findings from this project study will benefit elementary school teachers and other stakeholders. Integrating technology in a plethora of educational subjects opens the door for positive change. This project study shows an attempt to bridge the gap of knowledge regarding technology use in the classroom, as well as address the lack of technology training teachers felt they needed. This research included growth and development learning sessions that were driven by veteran teachers with confidence in technology use. Collaboration time was built into the professional development sessions which allowed teachers to express their thoughts and ideas with others. This will create positive social change because teachers benefited from their learning experience during the session. Research-based plans of actions combined with uplifting teacher experiences creates an important learning experience where both teaching and learning will improve. Based on the success of the urban study site, other urban schools can experience positive results in gained teacher confidence and increased student engagement from the practices and supports that the urban study site put into place.

Over the entirety of the development regarding this research, I have been challenged and have grown as a researcher beyond my expectations. I have experienced a range of emotions from wanting to give up to crying tears of joy. During the final analysis, I have viewed myself as a better leader, colleague, and change agent. I am proud to take this experience with me as I continue to make an impact in the field of education.

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Appendix A: Project

3 Day Technology Professional Development

District Mission: Educate, empower, and inspire all students to become contributing citizens in an ever-changing world.

District Vision: DASD students will achieve success by engaging in rigorous and relevant instruction, exploring a broad range of opportunities, and discovering unique pathways to a productive future through the supportive collaboration of the entire school community.

Professional Development Sessions Goals: provide technology resources for teachers.

You will walk away from these sessions with...

- A reboot technology session
- Gained technology confidence
- Technology resources, tips & tricks
- Collaboration time with colleagues
- Access to a technology HUB
- Improved classroom instruction
- Increased student engagement

Day 1 Session 1: AM 8:00-12:00 AM

Time	Activity	Notes
8:00-8:30	Check-In, Coffee & Conversations	*Teachers may sit where they would like. *Staff leading the PD session are walking around starting conversations/connecting with teachers.
8:30-8:45	Welcome & Overview	Review mission, vision, and session goals.
8:45-9:15	Confidence Level & Current Technology Concerns Activity	*Have teachers rate current technology confidence level–google form *Use Google jamboard to start technology conversations
9:15-10:00	Share Findings from Project Study + Teachers experiences using technology in the classroom	*Google Slides-data *Guest teacher speaker
10:10-10:15	Bathroom/Drink break	

10:15-11:00	Bring group back together with activity	
11:00-11:15	Explain reboot training session rotations. Share session description	Teachers will rotate to 4 technology stations for a reboot on their devices.
11:15-11:45	Start Technology Station 1: Teachers rotate to get a reboot on iPads, Macbooks, Apple TV, and Smartboards	Time for 1 technology station prior to lunch. *Display reboot room locations *Teachers bring technology devices with them
11:45-12:00	Practice what you learned from Station 1	Independent practice for teacher specific needs *Technology leaders are walking around/helping/answer teacher questions.
12:00-1:00	Lunch Break	

Day 1 Session 2: PM 1:00-4:00

Time	Activity	Notes
1:00-1:15	Bring everyone back together. Explain afternoon reboot session expectations & description	*Display technology training rotation/Room locations
1:15-1:45	Start Technology Station 2: Teachers rotate to get a reboot on iPads, Macbooks, Apple TV, and Smartboards	Teachers will bring technology devices with them
1:45-2:00	Practice what you learned from Station 2	Independent practice for teacher specific needs *Technology leaders are walking around/helping/answer teacher questions.
2:00-2:30	Start Technology Station 3: Teachers rotate to get a reboot on iPads, Macbooks, Apple TV, and Smartboards	Teachers will bring technology devices with them
2:30-2:45	Practice what you learned from Station 3	Independent practice for teacher specific needs *Technology leaders are walking around/helping/answer teacher questions.

2:45-3:15	Start Technology Station 4: Teachers rotate to get a reboot on iPads, Macbooks, Apple TV, and Smartboards	Teachers will bring technology devices with them
3:15-3:45	Practice what you learned from Station 4	Independent practice for teacher specific needs *Technology leaders are walking around/helping/answer teacher questions.
3:45-4:00	Closure/Reflection/Survey	Teachers will complete session survey for feedback

Day 2 Session 1: AM 8:00-12:00

Time	Activity	Notes
8:00-8:30	Check-In, Coffee & Conversations	*Teachers may sit where they would like. *Staff leading the PD session are walking around starting conversations/connecting with teachers.
8:30-8:45	Welcome & Overview	Review mission, vision, and session goals.
8:45-9:00	Review from Day 1	*Use Google jamboard to share one thing they learned from yesterday
9:00-9:10	Explain training sessions expectations. Teachers will sign up for 1 session. They will sign up for the other session at 10:45	Review descriptions of each training
	☐ *Google Basics*: Are you a beginner Googler? We'll work on increasing your skills and confidence with Google Docs and Google Slides on your Macbook. Creation and collaboration will be the name of the game for this session! To finish off we will learn how Google drive works, from organizing files and folders to sharing with your peers and students. We will work through all the questions that you have and move at the pace you need to feel comfortable using the Google tools. ☐ *Mac Tips & Tricks*: Shortcuts, features, and settings to make your life easier. Leave more comfortable with your computer. We'll spend time exploring keyboard shortcuts, gestures, settings for personalization, storage/file options and more. We will work through turning your computer into the best possible machine for you.	
9:10-10:00	Start Session 1	
10:00-10:30	Practice with you learned from	Independent practice for teacher specific

	Session 1	needs *Technology leaders are walking around/helping/answer teacher questions.
10:40-10:45	Bathroom/Drink Break	
10:45-11:30	Start Session 2: Teachers will choose the session they did not get at 9:00	
	☐ *Google Basics*: Are you a beginner Googler? We'll work on increasing your skills and confidence with Google Docs and Google Slides on your Macbook. Creation and collaboration will be the name of the game for this session! To finish off we will learn how Google drive works, from organizing files and folders to sharing with your peers and students. We will work through all the questions that you have and move at the pace you need to feel comfortable using the Google tools. ☐ *Mac Tips & Tricks*: Shortcuts, features, and settings to make your life easier. Leave more comfortable with your computer. We'll spend time exploring keyboard shortcuts, gestures, settings for personalization, storage/file options and more. We will work through turning your computer into the best possible machine for you.	
11:30-12:00	Practice with you learned from Session 2	Independent practice for teacher specific needs *Technology leaders are walking around/helping/answer teacher questions.
12:00-1:00	Lunch Break	

Day 2 Session 2: PM 1:00-4:00

Time	Activity	Notes
1:00-1:15	Bring everyone back together. Explain afternoon session expectations & descriptions	*Display options for teachers to sign up for.
1:15-2:00	Start Session 3	
	☐ *Clips*: Let the Students Create ...and the Teachers too! CLIPS is a powerful editing app exclusive to Apple devices. Use this tool to combine videos, pictures, titles, and music. Simple but powerful with plenty of already created posters to make your video look like a professional production. ☐ *Flipgrid:* Empowering every student by giving them a voice at school or home! You will learn how to set up and share your flipgrid groups and topics. We will also see how we can use the Flipgrid videos as formative assessments and ways to build a community with peer feedback. You will be able to set up yur class and play with the	

	different features.	
2:00-2:30	Practice what you learned from Session 3	Independent practice for teacher specific needs *Technology leaders are walking around/helping/answer teacher questions.
2:30-2:45	Bathroom/Drink Break	
2:45-3:30	Start Session 4	
	☐ *Nobility Basics*: An introduction to Nobility's functionality and classroom uses above note-taking. Learn about the tools available within the app, backup, and storage, iPad/Mac compatibility and explore different ways to integrate Notability into your classroom. Leave this session with a full understanding of the tool and the start of a project for future use. ☐ *Pages*: Pages is a powerful creation tool already on your Mac that is comparable to Microsoft Publisher. Learn about the ways to quickly and easily create and format signs and worksheets and turn PDFs into editable documents.	
3:30-4:00	Practice what you learned from Session 4	Independent practice for teacher specific needs *Technology leaders are walking around/helping/answer teacher questions.

Day 3 Session 1: AM 8:00-12:00

Time	Activity	Notes
8:00-8:30	Check-In, Coffee & Conversations	*Teachers may sit where they would like. *Staff leading the PD session are walking around starting conversations/connecting with teachers.
8:30-8:45	Welcome & Overview	Review mission, vision, and session goals.
8:45-9:00	Review from Day 2/Review expectations of sessions	*Use Google jamboard to share one thing they learned from yesterday *Share description of sessions with teachers
9:00-10:00	Start Session 1: Teachers will choose 1 session and do the other session at 10:30	
	☐ *Pear Deck & Nearpod*: Enough to Make you Dangerous-Pear Deck and Nearpod are two popular digital teaching tools which help you create interactive lessons. Let's learn the basics of both and see which one might best fit your classroom or maybe	

	both! Engage every student in every seat and give formative assessments, no matter what grade or subject you teach. ☐ *IWB Basics:* In this session you will learn the Basics + an extension on how to make your whiteboard interactive for students. This is a great technology tool that students love to use and it is a great way for students to take ownership of their learning!	
10:00-10:30	Practice what you learned from Session 1	Independent practice for teacher specific needs *Technology leaders are walking around/helping/answer teacher questions.
10:30-11:30	Start Session 2. Teachers will choose the technology session they did not do at 9:00 AM	
	☐ *Pear Deck & Nearpod*: Enough to Make you Dangerous-Pear Deck and Nearpod are two popular digital teaching tools which help you create interactive lessons. Let's learn the basics of both and see which one might best fit your classroom or maybe both! Engage every student in every seat and give formative assessments, no matter what grade or subject you teach. ☐ *IWB Basics:* In this session you will learn the Basics + an extension on how to make your whiteboard interactive for students. This is a great technology tool that students love to use and it is a great way for students to take ownership of their learning!	
11:30-12:00	Practice what you learned from Session 2	Independent practice for teacher specific needs *Technology leaders are walking around/helping/answer teacher questions.
12:00-1:00	Lunch Break	

Day 3 Session 2: PM 1:00-4:00

Time	Activity	Notes
1:00-1:15	Bring everyone back together. Technology Activity	*Teachers need iPads for activity
1:15-2:15	Collaboration time: focusing on teaching content (ELA, Math, Science, & Social Studies)	Teachers are collaborating with colleagues using their technology devices to create engaging lessons for their students. *All technology leaders will be available to assist teachers

	*Bathroom/Drink Break as needed	
2:15-3:15	Continued Collaboration time: focusing on teaching content (ELA, Math, Science, & Social Studies). If teachers teach more than one subject, they are choosing another subject for collaboration.	Teachers are collaborating with colleagues using their technology devices to create engaging lessons for their students. *All technology leaders will be available to assist teachers
	Optional Training for any teachers interested. They may attend training OR continue collaboration time. ☐ *Virtual Tours & Field Trips*: Bring the world to your classroom with virtual tours and field trips. You will receive an introduction to classroom application and exploration, collaboration, and creation.	
3:15-3:45	Discuss new HUB (one stop shop for all technology related resources) available for teachers	Teachers will learn how to navigate the new technology HUB.
3:45-4:00	Confidence Level/Reflection/Survey	Provide link for teachers to complete

Welcome Day 1: AM

Good morning everyone,

Please enjoy coffee and conversations. You may sit wherever you wish. We will start at 8:30 am.

Today's Schedule: AM

8:00-8:30 Check-in
8:30-8:45 Welcome & Overview
8:45-9:15 Technology Confidence Level
9:15-10:00 Findings
10:10-10:15 Bathroom Break
10:15-10:30 Reboot Training Expectations
10:30-11:30 Technology Station 1
11:30-12:00 Technology Practice

12:00-1:00 Lunch

Today's Schedule: PM

1:00-1:10 Reboot Training Expectations
1:10-1:40: Technology Station 2
1:40-2:00: Technology Practice
2:00-2:30: Technology Station 3
2:30-2:45: Technology Practice
2:35-3:15: Technology Station 4
3:15-3:45 Technology Practice

Mission/Vision

District Mission: educate, empower, and inspire all students to become contributing citizens in an ever-changing world.

District Vision: students will achieve success by engaging in rigorous and relevant instruction, exploring a broad range of opportunities, and discovering unique pathways to a productive future through the supportive collaboration of the entire school community.

PD Session Goals: provide technology resources for teacher.

What will you get out of this PD?

You will walk away with....

- a reboot training of your technology devices
- increase of technology confidence
- technology resources, tips & tricks
- collaboration time with colleagues
- access to districts technology HUB
- classroom instruction strategies
- student engagement strategies

Confidence Level

What is your current confidence level when it comes to using technology in your classroom?
*Answer your confidence level HERE.

1	2	3	4	5
Not confident		Somewhat confident		Very confident

What do you need to become more confident?

Click the link to join our technology conversation.

Google Jamboard

What do you need in order to become more confident using technology?

Research Questions

Research Question 1: What are teachers' perceptions of technology usefulness in their classrooms?

Research Question 2: What are teachers' perceptions of technology ease of use in their classrooms?

Research Question 3: What are teachers' perceptions of resources/support they need to use technology effectively in classrooms?

*Based on the research questions used above, the problem addressed is that teachers experienced barriers when it came to using technology in their classroom.

Findings

Themes:

1. All district technology provided to teachers are useful.
2. District technology devices are engaging and good for collaboration and communication.
3. The district could show growth in systems and support.
4. Teachers want more time and collaboration to learn, practice, and use the technology.

*All interviewed participants would like technology-focused professional development.

Teachers Experiences using Technology

Use Google Jamboard to share...

- one positive experience using technology in your classroom
- one negative experience using technology in your classroom

Bathroom Break: 15 minutes

Please return at 10:15.

Technology Reboot Training

Expectations for the following Technology devices (provided to you by the school district)

Station Rotation

- iPad
- Macbook
- Apple TV
- Smartboard

10:30-11:30 Technology Station 1

Technology Practice: 11:30-12:00

Now let's practice what you learned!

- ❖ independently
- ❖ collaborate with colleagues

Lunch Break: 12:00-1:00

Welcome Day 1: PM

Good afternoon,

I hope you enjoyed your lunch. We are going to get started on technology stations.

Technology Reboot Training

Expectations for the following Technology devices (provided to you by the school district)

Station Rotation

- ~~iPad~~
- Macbook
- Apple TV
- Smartboard

1:15-1:45 Technology Station 2

Technology Practice: 1:40-2:00

Now let's practice what you learned!

- ❖ independently
- ❖ collaborate with colleagues

Technology Reboot Training

Expectations for the following Technology devices (provided to you by the school district)

Station Rotation

- ~~iPad~~
- ~~Macbook~~
- Apple TV
- Smartboard

2:00-2:30 Technology Station 3

Technology Practice: 2:30-2:45

Now let's practice what you learned!

- ❖ independently
- ❖ collaborate with colleagues

Technology Reboot Training

Expectations for the following Technology devices (provided to you by the school district)

Station Rotation

- ~~iPad~~
- ~~Macbook~~
- ~~Apple TV~~
- Smartboard

2:45-3:15 Technology Station 4

Technology Practice: 3:15-3:45

Now let's practice what you learned!

- ❖ independently
- ❖ collaborate with colleagues

Closure/Reflection

Please complete the following survey before end of day.

Day 1 Reflection Survey

Welcome Day 2: AM

Good morning everyone,

Please enjoy coffee and conversations. You may sit wherever you wish. We will start at 8:30 am.

Today's Schedule: AM

8:00-8:30 Check-in
8:30-8:45 Welcome & Overview
8:45-9:00 What did we learn yesterday?
9:00-9:10 Training Expectations
9:10-10:00 Technology Session 1
10:00-10:30 Practice what you learned
10:40-10:45 Bathroom/Drink Break
10:45-11:30 Technology Session 2
11:30-12:00 Practice what you learned

12:00-1:00 Lunch

Today's Schedule: PM

1:00-1:15 Review afternoon expectations
1:15-2:00: Technology Session 3
2:00-2:30: Practice what you learned
2:30-2:45: Bathroom/Drink Break
2:45-3:30: Technology Session 4
3:30-4:00: Practice what you learned
*complete technology reflection survey

Mission/Vision

District Mission: educate, empower, and inspire all students to become contributing citizens in an ever-changing world.

District Vision: students will achieve success by engaging in rigorous and relevant instruction, exploring a broad range of opportunities, and discovering unique pathways to a productive future through the supportive collaboration of the entire school community.

PD Session Goals: provide technology resources for teacher.

What have you learned?

Click the link to join our technology conversation.

Google Jamboard

What is one thing you learned from yesterday's technology-focused sessions?

Technology focused sessions

Today we will provide technology sessions that go beyond the basics.
These session will be facilitated by our technology department and our own teachers with technology experience.

You will have options to choose from based on your current technology needs.

Technology Session 1 9:10-10:00

Choose 1

- *Google Basics:* Are you a beginner Googler? We'll work on increasing your skills and confidence with Google Docs and Google Slides on your Macbook. Creation and collaboration will be the name of the game for this session! To finish off we will learn how Google drive works, from organizing files and folders to sharing with your peers and students. We will work through all the questions that you have and move at the pace you need to feel comfortable using the Google tools.
- *Mac Tips & Tricks:* Shortcuts, features, and settings to make your life easier. Leave more comfortable with your computer. We'll spend time exploring keyboard shortcuts, gestures, settings for personalization, storage/file options and more. We will work through turning your computer into the best possible machine for you.

Collaboration time 10:00-10:30

Now let's practice what you learned!

- ❖ independently
- ❖ collaborate with colleagues

Bathroom Break 10:30-10:45

Now let's practice what you learned!

- ❖ independently
- ❖ collaborate with colleagues

Technology Session 2 10:45-11:30

Choose 1

- *Google Basics:* Are you a beginner Googler? We'll work on increasing your skills and confidence with Google Docs and Google Slides on your Macbook. Creation and collaboration will be the name of the game for this session! To finish off we will learn how Google drive works, from organizing files and folders to sharing with your peers and students. We will work through all the questions that you have and move at the pace you need to feel comfortable using the Google tools.
- *Mac Tips & Tricks:* Shortcuts, features, and settings to make your life easier. Leave more comfortable with your computer. We'll spend time exploring keyboard shortcuts, gestures, settings for personalization, storage/file options and more. We will work through turning your computer into the best possible machine for you.

Bathroom Break 11:30-12:00

Now let's practice what you learned!

- ❖ independently
- ❖ collaborate with colleagues

Lunch Break: 12:00-1:00

Welcome Day 2: PM

Good afternoon,

I hope you enjoyed your lunch. We are going to continue with our technology-focused training sessions.

Please choose which training you feel you need additional assistance with.

Technology Session 3 1:15-2:00

Choose 1

- *Clips:* Let the Students Create ...and the Teachers too! CLIPS is a powerful editing app exclusive to Apple devices. Use this tool to combine videos, pictures, titles, and music. Simple but powerful with plenty of already created posters to make your video look like a professional production.
- *Flipgrid:* Empowering every student by giving them a voice at school or home! You will learn how to set up and share your flipgrid groups and topics. We will also see how we can use the Flipgrid videos as formative assessments and ways to build a community with peer feedback. You will be able to set up your class and play with the different features.

Bathroom Break 2:00-2:30

Now let's practice what you learned!

- ❖ independently
- ❖ collaborate with colleagues

Technology Session 4 2:45-3:30

Choose 1

- *Nobility Basics:* An introduction to Nobility's functionality and classroom uses above note-taking. Learn about the tools available within the app, backup, and storage, iPad/Mac compatibility and explore different ways to integrate Notability into your classroom. Leave this session with a full understanding of the tool and the start of a project for future use.
- *Pages:* Pages is a powerful creation tool already on your Mac that is comparable to Microsoft Publisher. Learn about the ways to quickly and easily create and format signs and worksheets and turn PDFs into editable documents.

Bathroom Break 2:00-2:30

Now let's practice what you learned!

- ❖ independently
- ❖ collaborate with colleagues

Please complete the following survey before end of day.

Day 2 Reflection Survey

Welcome Day 3: AM

Good morning everyone,

Please enjoy coffee and conversations. You may sit wherever you wish. We will start at 8:30 am.

Today's Schedule: AM

8:00-8:30 Check-in
8:30-8:45 Welcome & Overview
8:45-9:00 What did we learn yesterday?
9:00-10:00 Technology Session 1
10:00-10:30 Practice what you learned
10:30-11:30 Technology Session 2
11:30-12:00 Practice what you learned

12:00-1:00 Lunch

Today's Schedule: PM

1:00-1:15 Review afternoon expectations
1:15-2:15: Collaboration
2:15-3:15: Continued Collaboration
3:15-3:45: Introduce HUB
2:45-3:30: Technology Session 4
3:45-4:00: Technology Reflection

Mission/Vision

District Mission: educate, empower, and inspire all students to become contributing citizens in an ever-changing world.

District Vision: students will achieve success by engaging in rigorous and relevant instruction, exploring a broad range of opportunities, and discovering unique pathways to a productive future through the supportive collaboration of the entire school community.

PD Session Goals: provide technology resources for teacher.

What have you learned?

Click the link to join our technology conversation.

Google Jamboard

What is one thing you learned from yesterday's technology-focused sessions?

Technology Session 9:00-10:00

Choose 1

- *Pear Deck & Nearpod*: Enough to Make you Dangerous-Pear Deck and Nearpod are two popular digital teaching tools which help you create interactive lessons. Let's learn the basics of both and see which one might best fit your classroom or maybe both! Engage every student in every seat and give formative assessments, no matter what grade or subject you teach.
- *IWB Basics*: In this session you will learn the Basics + an extension on how to make your whiteboard interactive for students. This is a great technology tool that students love to use and it is a great way for students to take ownership of their learning!

Collaboration Time 10:00-10:30

Now let's practice what you learned!

- ❖ independently
- ❖ collaborate with colleagues

Technology Session 10:30-11:30

Choose 1

- *Pear Deck & Nearpod*: Enough to Make you Dangerous-Pear Deck and Nearpod are two popular digital teaching tools which help you create interactive lessons. Let's learn the basics of both and see which one might best fit your classroom or maybe both! Engage every student in every seat and give formative assessments, no matter what grade or subject you teach.
- *IWB Basics*: In this session you will learn the Basics + an extension on how to make your whiteboard interactive for students. This is a great technology tool that students love to use and it is a great way for students to take ownership of their learning!

Collaboration Time 10:30-12:00

Now let's practice what you learned!

- ❖ independently
- ❖ collaborate with colleagues

Lunch Break: 12:00-1:00

Welcome Day 3: PM

Good afternoon,

I hope you enjoyed your lunch. This afternoon, we are going to collaborate with our colleagues based on the specific subject you teach (ELA, MATH, SCIENCE, SOCIAL STUDIES).

Please take a bathroom/drink break as needed throughout the afternoon sessions.

Collaboration Time Session 1 1:15-2:15

1. Please choose 1 subject to want to focus on first.
2. Meet with your colleagues in the same subject area and collaborate.
3. Use what you have learned in the technology sessions to plan engaging lessons for your students!

Collaboration Time Session 2
2:15-3:15

1. Please choose a different subject area to focus on.
2. Meet with your colleagues in the same subject area and collaborate.
3. Use what you have learned in the technology sessions to plan engaging lessons for your students!

*If you only teach one subject area, you may attend the following...

- *Virtual Tours & Field Trips:* Bring the world to your classroom with virtual tours and field trips. You will receive an introduction to classroom application and exploration, collaboration, and creation.

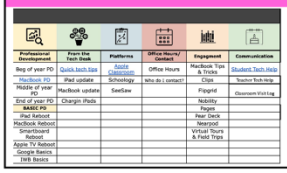
Technology HUB 3:15-3:45

We have created a one stop shop for all of your technology needs!

We are happy to introduce you to our

Technology HUB

Technology HUB



Professional Development	From the Tech Desk	Platforms	Office Hours/ Contact	Engagement	Communication
Beg of year PD	Quick tech tips	Apple Classroom	Office Hours	MacBook Tips & Tricks	Student Tech Help
MacBook PD	iPad update	Schoology	Who do I contact?	Clips	Teacher Tech Help
Middle of year PD	MacBook update	SeeSaw		Flipgrid	Classroom Visit Log
End of year PD	Chargin iPads			Nobility	
BASIC PD				Pages	
iPad Reboot				Pear Deck	
MacBook Reboot				Nearpod	
Smartboard Reboot				Virtual Tours & Field Trips	
Apple TV Reboot					
Google Basics					
IWB Basics					

Reflection

Please reflect on today's technology-focused professional development session.

Day 3 Technology Reflection

Appendix B: Email to Potential Participants

Dear Prospective Participant,

My name is Amanda Brady, and I invite you to participate in a research study entitled "Teacher Experiences with Technology Use Before, During, and After the Pandemic." This study is being conducted as part of the dissertation requirement for my Doctoral Degree at Walden University.

Purpose of the Study: The purpose of this qualitative study is to explore teachers' perceptions post pandemic of technology usefulness, ease of use, and support/resources needed.

Your responses will help researchers learn what struggles teachers have with technology and what supports they need moving forward. Results from this study will help administrators and district leaders plan professional development opportunities and what resources and supports teachers need in the future.

If you choose to participate, I request to conduct one face-to-face interview that would take approximately thirty to forty-five minutes. Interviews will be recorded to assist in the data collection, data analysis, and interpretation of findings. All data collected will be separated from any personal identifiers.

Your participation in this study is completely voluntary. You may decline to answer and question or withdraw from the study at any time without consequence. Also, your confidentiality and privacy are extremely important to me. I will not collect or report any identifiers or information that would identify you as an individual.

If you are interested in participating in this study, please reply to this email "I consent".

If you have any questions about this study, you may contact me directly via email at amanda.andrews2@waldenu.edu or by phone 443-910-1343.

Appendix C: The Consent Form

My name is Amanda Brady, and I invite you to participate in a research study entitled "Teacher Experiences with Technology Use After the Pandemic." This form is part of a process called "informed consent" to allow you to understand the study process and details pertaining to the study.

This study seeks 10 to 12 volunteers who are:

- Currently teaching with technology at an elementary school
- Teaching in the United States

This study is being conducted by a researcher named Amanda Brady who is a doctorate student at Walden University. You may know her as an assistant principal, but this study is separate from that role.

Study Purpose: The purpose of this qualitative study is to explore teachers' perceptions post-pandemic of technology usefulness, ease of use, and support/resources needed.

Why is this study being done?
In response to COVID-19, public school districts were forced to move education to online formats which presented many challenges for students, teachers, and administrators. This study will explore your experiences, challenges, concerns, and needed resources and supports since the COVID-19 pandemic began.

Your responses will help researchers learn what technology struggles teachers had pre, during and after the pandemic and what supports they need moving forward. Results from this study will help administrators and district leaders plan professional development opportunities and what resources and supports teachers need in the future.

Procedures:

- Participate in one face-to-face interview with the researcher regarding your experience and perspectives of technology use in the classroom. Interviews will take place during non-working hours and will last 30-45 minutes.
- Interview questions are open ended and you will have the freedom to share the information pertaining to this study that you deem most important.
- Interviews will be audio recorded, using Zoom, to assist in the data collection, data analysis, and interpretation of findings.
- You will be provided a transcribed copy of the interview, within seven days, to review for clarification and/or confirmation that any personal identifiers are effectively removed. Once you receive the transcript, it should take you 30-60 minutes to review it.

  Here are some sample questions:

  What are teachers' perceptions of technology usefulness in their classrooms?

  1. How useful do you think iPads are in your classrooms? What are they useful for?

2. How useful is your IWB in your classroom? What is it used for?
   How useful is your Macbook in your classroom? What is it used for?
3. How useful are technology supports provided by your school district?

What are teachers' perceptions of technology ease of use in their classrooms?

1. How easy is it to use your apple TV in your classroom? Please describe.
2. Are there any technology items in your classroom that you find are not easy to use in your classroom? What and please describe.
3. How easy is it to use SeeSaw in your classroom? How easy it for students and parents to use. Please describe.

What are teachers' perceptions of resources/support they need to use technology effectively in classrooms?

1. What type of technology training have you had?
2. How confident are you using the technology provided to you? (iPad, Macbook, IWB, apple TV).
3. Do you feel you have the resources you need now to conduct your classroom using technology?

Voluntary Nature of the Study:
Your participation in this study is completely voluntary. You may decline to answer a question or withdraw from the study at any time without consequence. You will not be treated differently if you decide not to participate in the study. If you choose to be in the study now, you can still change your mind and stop at any time.

Risks and Benefits of Being in the Study:
Being in this type of study involves minimal risk associated with the possibly of small discomforts, such as minor stress related to being interviewed and recorded. There is the possibility for professional risk, in which participants may feel as if their current level of technology is inadequate and that a majority of their personal and professional time should be spend building technology knowledge. Being in this study would not pose a threat to your safety or wellbeing. Based on findings from this research study, implications for a project could emerge that might benefit teachers and/or the school in addressing needs related to technology use in the classroom. Teachers from the same school as the researcher, may not participate due to conflict of interest.

Payment:
There will be no payments or gifts associated with participation in this study.

Privacy:
The researcher is required to protect your privacy. Reports from this study will not include the identities of individual participants. Details that could potentially identify participants, such as the location of the study or the grade level, also will not be shared. The researcher will not use your personal information for any purpose outside of this research project. The researcher is a

mandated reporter. Therefore, if any information is disclosed during the interview process, such as abuse, the proper authorities will be notified.

Information shared from this study will protect the identity of all participants. Data will be kept secure and recordings of interviews will eventually be deleted. All data, including contact information and interview responses, and observation data will be stored in a password-protected computer and a locked filing cabinet in the home of the researcher. Data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:
You can ask questions of the researchers by contacting via email at amanda.andrews2@waldenu.edu or by phone 443-910-1343. If you want to talk privately about your rights as a participant or any negative parts of the study, you can call Walden' University's Research Participants Advocate at 612-312-1210 or email: irb@mail.waldenu.edu. Walden University's approval number for this study is 03-24-23-0387658. It expires on March 23, 2024.

You might wish to retain this consent form for your records. You may ask the researcher or Walden University for a copy at any time using the contact info above.

Obtaining your consent:
If you feel you understand the study well enough to make a decision about it, please indicate your consent by replying to this email with the words, "I consent".

Respectfully,

Amanda Brady

Walden University Doctoral Student

Appendix D: Interview Protocol

Project: Teachers Experiences with Technology Use After the Pandemic

Time of Interview:
Date:
Place:
Interviewer: Amanda Brady
Interviewee (Pseudonym):

Say: I am conducting this study as part of my doctoral work at Walden University. Through this interview, I will gather information regarding your perceptions with technology after the pandemic. The interview will take 30-45 minutes. No one will treat you differently based on the response that you give for this interview. There are no rewards or compensation associated with this study. All information collected during the process will be reported confidentially, with a pseudonym used for you as the participant. You may choose to end this interview at any point or back out of this research project entirely at any time. Your participation is voluntary. At your request, you will be provided a transcribed copy of the interview to review for clarification and/or confirmation that nay personal identifiers are effectively removed. Do you have any further questions?

Have the interviewee read and sign the consent form

Turn on recorder

Interview Questions for Participants

General Questions

1. Which of the following age group do you belong to:
    a. 20-24
    b. 25-29
    c. 30-34
    d. 35-40
    e. Over 41

2. How many years have you been teaching in the district?

3. How many years have you been teaching in your current position?

4. What grade or subject do you teach?

Research Questions

RQ1: What are teachers' perceptions of technology usefulness in their classrooms?

1. How useful do you think iPads are in your classrooms? What are they useful for?
2. How useful is your SmartBoard in your classroom? What is it used for?
3. How useful is your Google mail in your classroom? What is it used for?
4. How useful is your Macbook in your classroom? What is it used for?
5. Are there any technology tools you find are not very useful in your classroom? What and please describe.
6. How useful is SeeSaw in your classroom? What is it used for?
7. How useful are technology supports provided by your school district?

RQ2: What are teachers' perceptions of technology ease of use in their classrooms?

1. How easy is it for students to use their iPads in the classroom. Can you give me an example?
2. How easy is it to use your SmartBoard in your classroom? Please describe.
3. How easy is it to use your Google mail in your classroom? Please describe.
4. How easy is it to use your MacBook in your classroom? Please describe.
5. Are there any technology items in your classroom that you find are not easy to use in your classroom? What and please describe.
6. How easy is it to use SeeSaw in your classroom? How easy it for students and parents to use. Please describe.
7. What are some factors that prevent you from successfully implementing technology into your classroom?

RQ3: What are teachers' perceptions of resources/support they need to use technology

effectively in classrooms?

1. What type of technology training have you had?
2. What resources do you have available when it comes to using technology in your classrooms? Do you take advantage of those resources? Please explain.
3. How confident are you using the technology provided to you? (iPad, Macbook, SmartBoard, Google mail).
4. What support do you need to use technology effectively in your classroom? Please explain.
5. When is the best time for you to receive support in using technology in your classroom?
6. What would you like to see the school district provide teachers in the future to effectively use technology in the classroom?
7. Do you feel you have the resources you need now to conduct your classroom using technology?
8. Is there anything else you want to share about technology supports and resources?

STOP RECORDING.

Say: Thank you for your time today. I appreciate you sharing your experiences with me. If you think of anything else that you wanted to add to any of the questions from the interview in the coming day, please do not hesitate to reach out to me via phone or email.