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# K–12 Teachers' Perceptions of Professional Development in Instructional Technology

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This is to certify that the doctoral dissertation by

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Walden University
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Abstract

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MA, Anderson University, 2012

BA, Anderson University, 1999

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Curriculum, Instruction, Assessment & Evaluation

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## Abstract

Educational organizations have experienced a transition from traditional to digital, online, or blended learning instructional platforms. Scholarly literature lacks research studies pertaining to the perceptions of kindergarten–12th-grade (K–12) teachers regarding professional development (PD) to support use of instructional technology. The purpose of this basic qualitative study was to investigate K–12 teachers' perceptions of PD that supports the use of instructional technology. The conceptual framework for this study was Puentedura's substitution, augmentation, modification, and redefinition model. Research questions were designed to explore K–12 teachers' perceptions of PD to support the use of instructional technology. Participants included nine K–12 teachers who participated in PD to support the use of instructional technology; experienced a transition from a traditional to a digital, online, or blended learning platform; and were located in a school setting in the United States. Participants were selected through purposive selection. Data were collected using semistructured interviews and coded to identify key words and emergent themes. Findings indicated that K–12 teachers perceive their implementation of PD to support instructional technology as essential instruction across all platforms but desired more training; teachers viewed the PD as baseline information and stressed the importance of ongoing, job-embedded PD to remain current with technological advances. This study may be of considerable influence with school districts to foster positive social change in PD practices to support instructional technology integration and to possibly alter the design of current PD to include follow-up sessions.

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# Dedication

This dissertation is dedicated to my family and support system. First, to my caring, loving, and supportive husband. Thank you for your endless amount of encouragement, unconditional love, and constant support throughout a lifetime of learning. To my children, I hope I make you proud and have shown you that living a life of purpose and passion matters. I hope that my educational journey has taught you that learning is for a lifetime and my life's work serves as an inspiration to you. Even more so, I hope that you have learned to remain humble and kind and that anything worth pursuing takes time, dedication, and a positive attitude. Success is shared with the ones who supported you at each step of the journey. My educational journey was atypical because of starting a family at an early age. I had obstacles along the way as an adult student and a professional, but with persistence, support, dedication, and a purpose-driven mindset, I found the process enjoyable. I also dedicate this dissertation to the Lord Jesus Christ for giving me a hope and a future, for calling me to the field of education, and for using my life as a witness to others along the way.

# Acknowledgments

First, I would like to thank my husband, children, family members, and friends for their continual encouragement and support throughout my doctoral journey. To my husband, I appreciate your continued love and support to encourage me to do my very best and for learning alongside me each step of the way. To my children, I appreciate your support and understanding, especially when I could not attend events due to coursework. To my extended family members, thank you for asking about my dissertation journey, encouraging me along the way, and participating in several deck parties or cookouts to celebrate life. Finally, to my amazing friend groups, the Walden Women and the Fab Five: Your friendships have blessed my life on so many levels and through multiple life events.

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# Chapter 1: Introduction to the Study

## Introduction

The transition from a traditional to a digital, online, or blended learning instructional platform, once viewed as optional, has now become an expectation in kindergarten through 12th grade instructional standards (United States Department of Education, 2019). Advancements in educational technology influenced a shift in the U.S. Department of Education's instructional standards, complexity, strategic learning, and advancement of teaching (Darling-Hammond, 2016). Furthermore, classroom integration of technology is a method of enhanced teaching and learning, yet the task of integrating computing across the curriculum has been noted as a challenge (Ottenbreit-Leftwich et al., 2018).

The number of modern technologies integrated into U.S. classrooms is vast and requires a paradigm shift coupled with professional development (PD) training to move from a traditional to a digital platform for teaching and learning (Ottenbreit-Leftwich et al., 2018). The increased use of technology in society requires teachers to change learning and teaching practices to align with innovations of teaching with technology (Admiraal et al., 2017). Additionally, teacher-centered beliefs are based on an assumption of knowledge delivery resembling traditional teaching methods, whereas learner-centered beliefs are focused on knowledge construction, collaboration, and student responsibility for learning (Admiraal et al., 2017).

Teachers are the crucial agents for innovations, change, and learner-centered teaching and learning with technological advances for the 21st century (Davis & Hall,

2018). PD designed to promote computing integration into curriculum and lesson plans that use computers as the primary tool to facilitate teaching and learning have increased, which promotes the need for in-depth training with an emphasis on programs, knowledge, and various levels of face-to-face (F2F) and online support (Coleman et al., 2016). The research problem for this study was an increased need to understand the perceptions of kindergarten to 12th grade (K–12) teachers regarding PD to support use of instructional technology.

Chapter 1 includes the background information for the study, the problem statement, purpose of the study, and research questions. Next, the conceptual framework, the nature of the study, and definitions from the literature are shared. Lastly, the chapter concludes with assumptions, scope and delimitations, limitations, and the significance of the study.

## Background

Curriculum and instruction in education have undergone significant changes with high rates of technological development (Flavell et al., 2019). Advancements in technology and cloud-based computing, constituted as an awakening in education, have created a rise in digital, blended, and online instruction with tech-enhanced curriculum and instruction (Flavell et al., 2019). Current models of PD intended to support teachers' instructional planning, delivery, and technology integration efforts fall short and are decontextualized (Cadero-Smith, 2020; Hutchison & Woodward, 2018). There are a variety of forces shaping the future of education and a K–12 transition from a traditional

to digital, blended, or online instruction, including accessibility, flexibility, and a learner-centered focus (Ally, 2019).

Academics are required to adapt positively to changes resulting from technology, however, PD approaches primarily focus on individual applications, platforms, and mastery (Flavell et al., 2019). As online learning grows in K–12, there is an increased need to prepare teachers with different competencies through PD courses designed with a focus on what will be learned and how it will be learned to gain the skills required to teach online (Borup & Evmenova, 2019; Roy & Boboc, 2016). As a result of adaptive change for technological advancements, teaching and learning are now focused on key characteristics of smart learning, identifying benefits and barriers to technology integration, overcoming challenges of designing smart educational environments, and supporting personalization in the learning ecosystem (Gros, 2016).

The traditional role of the teacher as the center of schooling has changed with the introduction of technology instruction and integration in the classroom (Kondos, 2018). The increased usage of technology for teaching and learning has created a disparity between digital natives and immigrants, tech tools, and instructional integration strategies (Riegel & Mete, 2017). Despite concerns with the scope and nature of teacher PD, literature on effective PD reveals principles that impact teacher practice and enhance student learning outcomes (Ekinci & Acar, 2019; Powell & Bodur, 2019). Many educators participate in PD opportunities that support a learner-centered focus, support for technology integration, and a digital platform. However, many researchers question effective teacher PD with ongoing concerns including one-time workshops and lack of

follow up, collaboration, or reflective practice (Powell & Bodur, 2019). My study provides insight into K–12 teachers' perceptions, which has not been addressed specifically in the current literature in terms of PD that supports the use of instructional technology.

## Problem Statement

The transition from a traditional to a digital, online, or blended learning instructional platform, once viewed as optional, has now become an expected K–12 technology instructional standard and outcome for 21st century teaching and learning as noted by the U.S. Department of Education (2019). Current education research emphasizes the importance of ongoing, job-embedded PD of teachers transitioning from a traditional to a learner-centered, digital instructional model (Archambault & Larson, 2015). Additionally, ongoing training and continuous PD must be provided to teachers of all disciplines to remain current with the latest technological developments (Camilleri & Camilleri, 2017). Teachers are consistently challenged with modern technologies believed to enable and increase job performance (Crompton & Burke, 2020). Therefore, teachers' preparations to design learning experiences with meaningful technology integration are critical to meet the expectations of what students should know and be able to do (Hutchison & Woodward, 2018).

Further research is needed to address the results of F2F, online, and hybrid approaches to PD on teacher practice and student learning outcomes across all grades and disciplines (Powell & Bodur, 2019). The gap in the current literature is a limited number of studies available from the perspectives of K–12 teachers that incorporates their voices

regarding PD to support instructional technology. Therefore, the research problem for this dissertation was an increased need to understand the perceptions of K–12 teachers regarding PD to support use of instructional technology. This problem was important because the perceptions of K–12 teachers may help teachers and PD focused on the transition from a traditional to a digital, online, or blended learning platform. The gap in research accelerated the need to explore teachers' perspectives to incorporate their voices regarding PD to support the transition from a traditional to digital, online, or blended learning platform.

## Purpose of the Study

The purpose of this basic qualitative study was to investigate the increased need to understand the perceptions of K–12 teachers regarding PD to support the use of instructional technology. Therefore, the basic qualitative study served as a connection between the problem addressed and teachers' perceptions of PD to support instructional technology. By exploring K–12 teachers' perceptions, the knowledge acquired from this study may help inform the field of education on how teachers' voices can shape PD design and implementation to support instructional technology usage. The insights gained from studying teachers' perceptions offers an increased understanding of PD to support instructional technology.

## Research Questions

The purpose of this basic qualitative research study was to investigate K–12 teachers' perceptions of PD that supports the use of instructional technology. The research questions focused on teacher perceptions and experiences. To explore the

perceptions and experiences of K–12 teachers regarding PD that supports the use of instructional technology, the following research questions were used to guide the interview process:

RQ1: What are K–12 teachers' perceptions and experiences of the PD provided by their school districts to support the use of instructional technology?

RQ2: How do K–12 teachers put into practice their learning from PD to support the use of instructional technology?

## Conceptual Framework

Substitution, augmentation, modification, and redefinition (SAMR), the framework developed by Puentedura (2009, 2013), is used to organize technology integration into four levels. Frydenberg and Andone (2018) characterized the SAMR model as a progressive continuum designed to enhance and transform learning through technology. The first level, *substitution*, acts a direct tool substitute without functional change. For example, substituting a handwritten narrative for a typed version. The next level, *augmentation*, acts as a direct tool with functional improvement. Using the same example, teachers assign a creative writing assignment where students use tools to enhance writing such as spell check and format options to improve writing and productivity. *Modification* allows for significant task design, such as implementation of cloud-based computing via Google Docs to create a writing assignment, share the document with a co-editor or viewer, and gain immediate feedback through edits or comments. Finally, *redefinition*, allows for the creation of a new task previously an inconceivable option. Redefinition affords teachers and students the option to create

stories, transform the stories into multimedia productions through iMovie, storyboard apps, web-based video publications, and feedback options.

Technology is embedded throughout society and a part of the educational landscape for teaching and learning through various devices and digital tools (Caukin & Trail, 2019). Technology integration is a critical skill that teachers need to acquire to enhance learning, support academic standards, and achieve learning objectives (Hutchison & Woodward, 2018). Mobile devices, such as iPads and Chromebooks, can be used to teach and transform learning (Crompton & Burke, 2020). The SAMR model challenges teachers to think about how and why technology is used in teaching and learning, as well as how technology aids pedagogical development through technology integration (Caukin & Trail, 2019). Additionally, selecting educational technology tools can be challenging when teachers are faced with difficulties related to effective technology integration (Hutchison & Woodward, 2018). As time and educational platforms continue to evolve, educational institutions and teachers must consider carefully what technology offers and how, when, and why technology is used, rather than using technology as a mandated checklist (Pride, 2016).

## Nature of the Study

The basic qualitative research study was consistent with understanding how teachers perceive PD that supports the use of instructional technology. The purpose of this study was to investigate K–12 teachers' perceptions of PD that supports the use of instructional technology. A qualitative research study of K–12 teachers allowed for further exploration of the research topic based on interviews. The study on teachers'

perceptions of the implementation of PD to support instructional technology is meaningful to the field of education, especially when teachers contribute to the broader purpose, aspirations, and opportunities to promote positive social changes toward sustainability in teaching and learning. This basic qualitative study provided additional insights to the field of education regarding teachers' perceptions of PD to support instructional technology (Ravitch & Carl, 2016). Additionally, the research findings inform the field of education about the importance of effective PD and build a better understanding of K–12 teachers' perceptions of PD to support the use of instructional technology.

## Definitions

The following words and phrases are used throughout the study and have the following definitions:

*Blended learning*: An instructional design structure aligned with technology integration paired with F2F instruction to vary student learning (Yang et al., 2021).

*Digital immigrants*: Individuals who are uncomfortable with technology usage (Riegel & Mete, 2017).

*Digital natives*: Individuals who are comfortable with technology usage who already have positive internal factors related to technology (Ottenbreit-Leftwich et al., 2018; Riegel & Mete, 2017).

*Educational technology*: A digital device or tool that helps teachers and students access information, communicate information, and collaborate with others (Camilleri & Camilleri, 2017).

*Effective teacher professional development:* Also referred to as effective teacher training, structured professional learning that results in changes in teacher practices and improvements in student learning outcomes (Darling-Hammond et al., 2017).

*External barriers*: Also referred to as extrinsic or first-order barriers, obstacles external or extrinsic to teachers and include lack of access to computers, software, insufficient time to plan instruction, inadequate technical and administrative support (Admiraal et al., 2017; Ertmer, 1999).

*Face-to-Face*: Also referred to as traditional face-to-face learning and abbreviated as F2F (Louis-Jean & Cenat, 2020).

*Instructional technology:* Formerly referred to as *media* including radio, television, film, and recordings before the onset of computer age; modernly viewed as a design practice for development and processes of learning (Seels & Richey, 1994).

*Internal barriers*: Also referred to as intrinsic or second-order barriers, obstacles internal to the educator, including beliefs about teaching, computers, classroom practices, and willingness or unwillingness to change; requires more fundamental changes, typically rooted in teachers' core beliefs about teacher–student roles, teaching methods, and teaching with technology (Admiraal et al., 2017; Ertmer, 1999).

*Internet reciprocal teaching:* An instructional design structure that establishes a collaborative space within both the physical space of a classroom and the digital spaces where students interact (Hutchison & Woodward, 2018).

*Learner-centered instruction*: Also referred to as student-centered, the learners are at the center of instruction and the needs of the learner are at the heart of the teaching and learning process (Tarbutton, 2018).

*One-to-One:* Also referred to as 1:1 technology devices, tools, and platforms (Lubniewski & Kiraly, 2020).

*Professional development (PD)*: The educational opportunities provided to teachers to assist in the development of skills for use in their classroom, all the practices and activities for teachers' growth (Ercan & Ivanova, 2020). In this study, PD applies to technology integration, teaching, and learning.

*SAMR model:* A framework used to organize technology integration into four categories: substitution, augmentation, modification, and redefinition (Crompton & Burke, 2020).

## Assumptions

This basic qualitative study was based on several assumptions. First, I assumed the interview questions used in the study would appropriately assess the perspectives of K–12 teachers and capture the experiences defined by the purpose of the study. I carefully crafted the interview questions based on the conceptual framework, literature review, and my understandings of the research. Second, I assumed that all participants of the study would feel empowered to answer openly and honestly in response to the interview questions. I assured participants their identities would be kept confidential. Lastly, I assumed that participants were engaged in ongoing, job embedded PD that supports the use of technology. As participants worked with technology enhanced

learning platforms, participants experienced slightly different teaching and learning experiences compared with other participants who engaged in PD to support a transition from a traditional to a digital, online, or blended learning instructional platform.

## Scope and Delimitations

The scope of this basic qualitative research study included K–12 teachers who have participated in PD to support the use of instructional technology. The participants needed to be K–12 teachers with experience teaching in a traditional setting with a transition to a digital, online, or blended learning platform. The interviews included nine teachers to gather perspectives and data through interviews to reach data saturation. Teacher interviews were used to learn more about their experiences. The boundaries of the study were limited to K–12 teachers located in a variety of different school settings throughout the United States. The small number of K–12 participants provided an opportunity to focus on teachers' perspectives, and broad generalizations were not included. The results of the study provide details on experiences, but I concluded that all K–12 teachers did not share the same experiences.

## Limitations

This research study included limitations. As basic qualitative research was used, this study including the following limitations: I was the sole interviewer with the possibility of personal biases. Bias exists in all research due to underlying beliefs and assumptions (Ravitch & Carl, 2016). One potential bias in this study was that I have taught in a traditional setting and have participated in PD that supported a transition to a digital, online, or blended-learning platform. This bias was addressed through full

transparency. I provided participants a copy of their interview transcript for review and feedback. The second potential limitation was the use of virtual interviews. Conducting the interviews virtually potentially impacted data analysis and lack of in-person experiences. The last potential limitation was a small sample size. The small sample size may limit transferability and limited generalizability.

## Significance

This qualitative research is unique to the field of education because it was conducted to address an under researched area focused on K–12 teachers' perceptions of PD to support the use of instructional technology. This research helps fill a gap in the understanding of the current model of PD that supports instructional technology usage in teaching and learning. The research study findings provide insights that may inform the way PD is introduced to teachers to support the use of instructional technology.

The results of this study provide necessary insights into the processes by which teachers obtain and receive PD aligned with technological supports. Education is a prime field equipped for social change—a field that embraces an ever-changing landscape of the educational pathways for teaching and learning. The potential reach of the findings could be of considerable influence in school districts, government agencies, and other organizations to prompt a positive social change in current PD, create a demand for additional research central to PD, and usage of the research results to develop policies to ensure effective ongoing, job-embedded PD to support instructional technology integration.

## Summary

In this chapter, I described the topic of the study, why the study needed to be conducted, and the potential social implications of the study. I discussed the background of curriculum and instructional adaptations for technological advancements, and the nature of teacher PD, and I identified the gap in the current literature—a limited number of studies available from the perspectives of K–12 teachers that incorporate their voices regarding PD to support instructional technology. The research problem for this dissertation was an increased need to understand the perceptions of K–12 teachers regarding PD to support the use of instructional technology. The problem was important because the perceptions of K–12 teachers can help teachers and PD focused on the transition from a traditional to a digital, online, or blended learning platform. The gap in research accelerated the need to explore teachers' perspectives to incorporate their voice regarding PD to support the transition from a traditional to digital, online, or blended learning platform. The purpose of this basic qualitative study was to investigate K–12 teachers' perceptions of PD that supports the use of instructional technology.

Research questions included investigation of K–12 teachers' perceptions about the role of the school district to provide PD to support instructional technology; teachers' perceptions about PD training to support instructional technology; and teachers' preferences regarding F2F, online, or hybrid approaches when receiving PD to support instructional technology. I introduced the SAMR model, the conceptual framework for this study, which offers an opportunity to enhance and transform teaching and learning as

well as classroom experiences that support the use of instructional technology (see Puentedura, 2012).

I provided insight into the nature of the basic qualitative study, key terms and definitions, assumptions, scope and delimitations, limitations, and the significance of the study. This basic qualitative study was consistent with understanding how teachers perceive PD that supports the use of technology. Key terms and defined terms were highlighted and included concise definitions supported by professional literature to enhance meaning as it related to the research study. The basic qualitative study included three assumptions focused on the interview questions, empowerment of participants, and engagement in ongoing, job embedded PD that supports the use of instructional technology. The scope of the research study included K–12 teachers in various school settings throughout the United States who have participated in PD to support the use of instructional technology. Limitations of the study included a sole researcher, personal biases, virtual interviews, and a small sample size. Finally, the results of this qualitative study provide additional insights into processes for teachers to obtain and receive PD aligned with technological supports.

The information provided in Chapter 1 was the cornerstone for the topics covered in Chapter 2. Chapter 2 includes an introduction and literature research strategy outlining the databases, key search terms, and the iterative research process. The conceptual framework is identified and defined. The studies related to the constructs of the literature review are described, justified, and synthesized for meaningfulness. Finally, Chapter 2

concludes with a summarization of the major themes and how the study fulfills the gap in literature to expand knowledge in the field of education.

# Chapter 2: Literature Review

## Introduction

The current demand for curriculum focused on the use of technology has increased, and teachers' readiness to effectively use technology in education is of high importance (Kamahina et al., 2019). The purpose of this basic qualitative study was to investigate K–12 teachers' perceptions of PD that supports the use of instructional technology. If teachers fail to receive the necessary PD to support the use of instructional technology in their classrooms, the impact can be vast (see Camilleri & Camilleri, 2017). A need therefore arises to understand the perceptions of K–12 teachers regarding PD to support the use of instructional technology. Although research has indicated the use of technology in classrooms supports student success, teachers' perceptions, and experiences about PD to support instructional technology are key to further understand the trajectory of the educational effect (Hutchison & Woodward, 2018). There is a limited number of studies available from the perspectives of K–12 teachers that incorporates teacher voice regarding PD to support instructional technology. In Chapter 2, I present the literature search strategy, conceptual framework, literature review related to key concepts, summarization of major themes, and conclusions.

## Literature Search Strategy

I used the following databases and search engines to conduct my literature review: EBSCO, ProQuest, Education Resources Information Center, The Learning and Technology Library, Education Source, Google Scholar, Science Direct, and Education Source. I sought to gather peer-reviewed literature related to PD, education, technology,

technology integration, teacher perceptions, learner-centered instruction, and the SAMR model. The keywords used in my search included the following terms: *teacher perceptions, professional development, technology, technology education, learner-centered instruction*, and *SAMR*. The iterative search process involved using various combinations the keywords to locate articles across the databases selected.

The keywords were used to identify and select peer-reviewed articles that provided relevant and pertinent information outlined in my literature review. In the event there was little current research, I reviewed the reference lists provided by each author to determine if any of the article titles and sources listed might be relevant to my research study. Once selected, I returned to the databases to conduct a search of the articles of interest, read the abstract to build background and decide if the information aligned with my research topic. Upon determining topic relevance and alignment, I reviewed each article for additional information to conduct a thorough literature review.

## Conceptual Framework

Puentedura's (2009) contemporary reframing of classroom experiences that use technology, known as the SAMR model, a continuum to enhance and transform teaching and learning using technology, was used as the conceptual framework for this study. This framework originated with Puentedura (2009) and was adopted by learning organizations that embrace the changing landscape of how people learn, where they learn, and what they want to learn (Utecht & Keller, 2019). The SAMR model is a modern framework applicable to curriculum and instruction and relevant to all types of educational technology (Caukin & Trail, 2019). Puentedura (2009) provided a ladder infographic to

visualize the SAMR approach with the first rung, substitution, as the baseline where technology acts as a direct tool substitute and no functional change. With the second rung, augmentation, technology acts as a direct tool substitution with functional improvement. The first two steps on the ladder—substitution and augmentation—are identified as technological enhancements (Pride, 2016). The third rung in the SAMR model, modification, begins the transformation stage in which tech allows for significant task redesign. The last rung on the ladder, redefinition, involves the creation of a new task previously noted as inconceivable and an integral component (Pride, 2016). Teaching and learning through the SAMR model enhances and transforms curriculum, instruction, and technology integration across all educational platforms.

For my study, I will use the SAMR model as it relates to K–12 teachers' perceptions of PD that supports the use of instructional technology. The SAMR model designed by Puentedura (2012) gained popularity and provided teachers with a framework to enhance the integration of emergent and modern technologies to promote 21st-century skills (Crompton & Burke, 2020). As schools increase technology integration, teachers have been challenged to consider when, how, where, and why technology fits into curriculum and instruction (Caukin & Trail, 2019). The shift in educational technology challenges required teachers to adapt and learn advanced technological developments that drive curriculum and instruction and align with academic standards (McBain, 2018). The K–12 instructional landscapes and platforms have changed drastically, placing an emphasis on networked learning (Oddone et al., 2019). Therefore, I selected the SAMR model framework for this study as the

pedagogical approach to curriculum and instruction with a lens on PD to understand teaching and learning across diverse educational technological platforms.

The four-level, taxonomy-based approach is used in K–12 education to select and evaluate technology (Hamilton et al., 2016). Educators use the substitution level to substitute a hard copy document, such as a graphic organizer, skills practice sheet, or a test, with a digital version. At the augmentation level, teachers supplement instruction with a video to demonstrate harder-to-explain concepts. The modification phase is ideal for collaborative opportunities to work on a shared document or innovative projects such as podcasts, multimedia presentations, or multimodal components that shift an abstract concept to something visible. Redefinition, the final level, establishes new learning opportunities through real-world connections, technological skills and literacy, and the ability to interact with individuals across the globe as a part of the learning experience. In the redefinition phase, students publish works such as shorts, webworks, printable documents, and more to open the gateway to high order thinking, learning, and sophistication. Educators use Bloom's taxonomy (1956) and the SAMR model jointly to increase the development of competencies, collaboration, communication, and successful implementation of smart devices in F2F, blended, or online instruction.

## Literature Review Related to Key Concepts

In the literature review, I address key concepts and themes related to K–12 teachers' perceptions of PD that supports the use of instructional technology. The literature review is focused on current literature publications related to the findings for my research study. The current publications and literature reviewed address the emergent

categories including educational principles and approaches, technology criticisms and contrary views, challenges of technology in the classroom, drivers of change, best practices for use of technology in the classroom, barriers, constraints, and shortcomings.

Technology integration in the K–12 classroom, whether online or in-person, is an enduring task, especially when time, resources, and PD are limited. Providing teachers with relevant and timely professional development is of the utmost importance to prepare students with robust 21st-century curriculum and instruction. Teaching and learning with technology-rich curriculum and instruction has been supported throughout various research studies as a means to employ academic standards, meet highly effective instructional requirements, support teaching pedagogy, and prepare students for an ever-changing global landscape for college, careers, and life (Wilcox et al., 2017). Without strong PD training in place, teachers lack access to the latest research-based pedagogical practices and assurance of timely integration of technological advancements for teaching and learning.

**Educational Principles and Approaches**

Technology in education is related to various principles and approaches, including the SAMR model, a learner-centered classroom, differentiated instruction, collaborative learning, and experiential learning (Puentedura, 2013). The digital age brought forth the necessity for teachers and students to use technology as a core component of the instructional landscape (Archambault & Larson, 2015). Educational principles that support instructional technology depend on pedagogical approaches used in curriculum and instructional models. The use of technology in education is a functional structuring of

learning deemed necessary for 21st century teaching and learning that improves the educational system (Serin & Bozdag, 2020). Furthermore, the perspectives of K–12 teachers related to PD that supports instructional technology are essential to understanding educational principles and approaches that drive curriculum and instruction.

### *SAMR Model*

The SAMR model and framework is focused on moving educational technology from theory into practice (Puentedura, 2009). Technology is a component of everyday life and use in schools across all classrooms or courses in some form, shape, or fashion (Caukin & Trail, 2019). As mobile devices, such as iPads and Chromebooks, become the education technology tool of choice used to transform teaching and learning, teachers must shift from a traditional instructional model to a modern approach, such as the SAMR model. The SAMR model includes four hierarchal tasks: substitution, augmentation, modification, and redefinition (Crompton & Burke, 2020). Technology should be used intentionally and strategically as a tool that allows teachers to instruct and students to engage in learning through authentic experiences (Caukin & Trail, 2019).

Technology in classroom instruction has changed the expectations for teachers and students. The approach of technology integration is an important PD topic necessary for teachers to acquire the skills needed to deepen students' learning, support academic rigor and achievement, and align with 21st-century learning (Hutchison & Woodward, 2018). Teacher preparedness requires PD to instruct students in a blended, online, or F2F platform. PD of teachers should include a model grounded in discussion and application

of technology integration, situated digital tools within the context of instruction, and use of multiple modes of teacher engagement (Hutchison & Woodward, 2018).

The SAMR model affords schools, districts, and teachers the opportunity to reclassify classroom experiences as a scaffold for using technology (Pride, 2016). Teachers' preparation to facilitate learning with meaningful integration of technology is critical, and the SAMR model provides teachers with a framework to adapt a learner-centered classroom with a digital focus and foundation (Hutchison & Woodward, 2018). To meet national reform, improve goals, enhance teachers' practices and performances to encourage integration of innovative technological instructional approaches, growing evidence shows that teachers need next-level PD related to tech integration and substitution of traditional teaching strategies (Hutchison & Woodward, 2018).

### *Learner-Centered Classroom*

Learner-centered teaching is focused on students' learning through individualized instruction and learner-centered organization (Zhang et al., 2021). Learner-centered instruction embodies student responsibility for learning, knowledge construction, and collaboration (Admiraal et al., 2017). Furthermore, the development of learner-centered principles aids in the implementation of educational technology (Zhang et al., 2021).

In the learner-centered classroom, educators must transition from a teacher-centered to a learner-centered instructional approach (Morrow & Lee, 2019). The change in teaching practices aligned with technological advances and 21st-century instructional standards challenges beliefs and attitudes toward technology with a shift in direction for the learner-centered classroom and online platforms (Admiraal et al., 2017). Teaching

and instruction in the learner-centered classroom, which supports technological advancements, is drastically different with varied instructional practices in classrooms and school districts (An & Mindrila, 2020). In such settings, educators must embrace the transition from teacher-centered to learner-centered instruction with the use of technology (Morrow & Lee, 2019).

The learner-centered educator considers individual student differences and diverse needs and adopts a focused concentration on preparing students for a rapidly changing global world (An & Mindrila, 2020). Education systems are preparing students for jobs that currently do not exist because of emergent technology and advancements changing the educational landscape (Ally, 2019). Teachers must understand the diverse learners in their classrooms, use best practices, engage students in learning, and overcome internal and external barriers presented by today's technological society (McBain, 2018). To meet the needs of diverse learners in the learner-centered classroom, teaching and instruction requires differentiation coupled by a teacher acting responsively to learners' needs (Bogen et al., 2019).

### *Differentiated Instruction*

Differentiated instruction is an essential strategy to incorporate and encourage the facilitation of teaching, learning, and instruction (Bogen et al., 2019). Teachers have the responsibility of teaching in schools that are increasingly diverse with the expectation of reaching all students regardless of diversity in learning (McBain, 2018). In today's classroom or educational online platforms, diverse learners use technology to access learning materials, adapt to use smart learning technologies, and develop skills necessary

for independent learning (Ally, 2019). Thus, teachers are expected to react responsively by adapting and using differentiated instruction across the curriculum to meet learners' needs (Bogen et al., 2019).

Differentiated instruction is a key trend in education connected with technology integration and support amongst other strategies used to reach diverse learners and across instructional platforms including F2F, blended, or online learning (Gunter & Reeves, 2017). The main goal of using differentiation across the curriculum by teachers is to maximize growth and individualized success for all students (Bogen et al., 2019). Effective use of differentiated instruction can increase academic achievement and motivation and boost performance (Bogen et al., 2019). Likewise, differentiated instruction for teachers requires educational experiences with high-level thinking, a response to individual learning needs, authenticated tasks to help build understanding, and collaborative interactions across learning platforms (Ismajli & Imami-Morina, 2018).

Teachers who use 1:1 technology are at an advantage over teachers without access to devices because the technology access allows for differentiation, enrichment, and alignment with 21st century standards (Flavell et al., 2019). The use of technology grants teachers the opportunity to differentiate and tailor instruction, meet diverse learning needs, promote, and encourage academic achievements (Flavell et al., 2019). Therefore, when planning the PD for teachers providing teachers with educational technology, steps to address various learning styles, support to development individualized learning pathways, differentiated instruction techniques, and improvement of long-range curriculum plans are key components to build systemic change (Bogen et al., 2019).

### *Collaborative Learning*

Collaborative learning for teachers is an essential practice to support teaching and learning across multiple instructional platforms including F2F, blended, and online. However, learning how to integrate technology into the classroom can be an isolating and challenging endeavor (Dorner & Kumar, 2016). To build and create robust instruction, schools and districts must create and sustain collaborative communities of practice through instructional leadership, clear goals, defined autonomy, systems, and structures fa vision of elevated expectations (Cadero-Smith, 2020). A healthy collaborative learning environment takes work and care to establish and maintain (Utecht & Keller, 2019).

The onset of digital technologies changed teaching and learning. This change promoted innovative pedagogical practices that incorporated using technology to teach and learn through collaborative processes and platforms (Camilleri & Camilleri, 2017). Collaborative learning for teachers can occur in traditional settings as well as online and digital learning platforms that include cloud-based computing and sharing, artificial intelligence, augmented and virtual reality, and mobile learning (Ally, 2019). Teachers who understand the necessary components of collaborative learning must take into consideration the learning management systems and a diverse audience of learners which include digital immigrants and digital natives, who hold different mindsets. The digital immigrant views the learning of modern technology as difficult, whereas the digital native uses technology in diverse manners and a means to communicate or collaborate (Riegel & Mete, 2017). The mindsets of the two groups bring additional challenges when transitioning from a traditional to a more modern way of instructing. The teacher's role in

the collaborative classroom, in-person or online, requires one to use internet reciprocal teaching (Hutchison & Woodward, 2018). Internet reciprocal teaching involves questioning, locating, critical thinking, synthesizing, communicating, but also involves fluidly adapting between whole-class direct instruction to individualized support and providing collaborative space where students interact (Hutchison & Woodward, 2018). As schools and districts move forward to embrace collaborative learning, changes in curriculum and instruction, and the advancement of educational technology, the needs of digital immigrants and natives will continue to impact the delivery of curriculum and instruction (Riegel & Mete, 2017).

Educational technology is a powerful tool that affects schools and collaborative learning efforts. Most recently, with the onset of the global COVID-19 pandemic, connection through educational technology, collaborative learning, and various online learning platforms served as the pivotal delivery method for curriculum and instruction. Educational technologies used to build collaborative learning communities included, but are not limited to Google Suite comprised of Docs, Sheets, and Slides. Additional collaborative tools such as Canvas, SeeSaw, Adobe Spark, Kahoot!, Screencastify, and Zoom were designed and used for in-person or digital platforms to enhance and transform teaching and learning, connect people through web-based learning management systems, provide interactive tools, and offer applications through multimedia platforms (Hashimi et al., 2019). The collaborative learning environment, whether in-person or online, serves a multidimensional purpose to connect, engage, transform, and educate teachers and students, cultivate real-world learning, and equip students for a tech-savvy world (Gunter

& Reeves, 2017). Furthermore, digital learning and educational technologies contribute to a collaborative epistemology where learning is constructed and negotiated through interacting with others (Mattar, 2018).

### *Experiential Learning*

Experiential learning focuses on the importance of experiences to construct knowledge and the process of change in which one draws on past experiences to engage with new experiences (Girvan et al., 2016; Mattar, 2018). Technology has changed education systems and forced stakeholders to rethink best practices, teacher training, and technology integration (Ugur & Koc, 2019). Likewise, technological changes and developments call for systemic change outlined by clearly defined outcomes and a sustainability plan (Paulus et al., 2020). Drivers of relevant change for teaching and learning include real-life and practice-based experiences throughout the learning organization (Mattar, 2018). Furthermore, there is a growing need for educational systems to support the success of teachers through professional learning, innovation, technology, and activities that develop collaboration, communication, creativity, and critical thinking (Ugur & Koc, 2019).

Experiential learning in professional practice focuses on the experience of teachers who develop instructional approaches while in the classroom by adopting new theories, practices, and content (Mattar, 2018). The PD of teachers is viewed as an approach to motivate teachers to enact curricular changes and try new instructional practices (Girvan et al., 2016). As teachers consider various principles that guide teaching and learning, experiential learning using the SAMR model allows depth and complexity

of technology integration starting with PD then transferred to the classroom or course (Crompton & Burke, 2020). The educational landscape offers opportunities for enhanced technology integration through multiple platforms including F2F, blended, and online instruction (Fernandez, 2017). The traditional models of teacher development have changed tipping the focus on teachers as active participants to support their learning, an emphasis on reflective practice, and intentional implementation of technology tools and web applications to enhance and transform education (Mattar, 2018).

**Technology Criticisms and Contrary Views**

The impact of digital technology offered the educational community various ways to engage learners and teachers through multimedia tools and Web 2.0 technologies that build communication and collaboration for in-person, blended, and online learning platforms across the globe (Conole & Brown, 2018). In addition, the massive open online course movement brought about a different mindset and thinking about the role of technology in education which reshaped societal ideas and practice (Conole & Brown, 2018). Futhermore, teachers are critical of PD when viewed as a mandate rather than self-selection for growth opportunities (Sterrett & Richardson, 2020). Likewise, technological advancements generated criticism and contrary views as educators and learning organizations adjusted to modern teaching and learning. As educators adjust and navigate the modern landscapes of blended, online, and digital instructional platforms, it is imperative to recognize that the transition to teach online can be daunting and a foreign concept (Tucker, 2020).

Educational technology includes the study and practice of teaching and learning through hardware and software, along with how people learn and how technology facilitates learning (Chmiel, 2019). Additional criticisms of educational technology are central to policy related issues, equity of access, training and development, and leadership initiatives. The transition to an educational technology robust platform requires a comprehensive approach and a transition plan that expands beyond filling classrooms with technology and prepares all stakeholders for digital instruction (Xie et al., 2017). Educational technology requires a paradigm shift that reframes education learning communities switching from a traditional instructional model to digital learning platform impacting multiple levels of learning from the home and community, school-levels, classroom and teacher levels, and individual learners (Rodney, 2020).

**Challenges of Technology in the Classroom**

Using educational technology tools requires training, tutorials, and implementation plans including opportunities for PD, mentorship, and practice between training to account for the learning needs of all teachers (Cadero-Smith, 2020). Additionally, technology in education is considered an area of change, one that has been problematic (McQuirter, 2020). Therefore, new approaches, tools, resources, and environments require a pedagogical shift with additional coaching to provide teachers with effective pedagogical and technological support to bridge the gap between beliefs and practice (Gunter & Reeves, 2017). The technology challenges for classroom use are related to time, constraints, training or lack of training, and capacity.

The evolution of education technology has expanded and requires ongoing, job-embedded training, practice, and application to move theory into practice (Gunter & Reeves, 2017). As a result, schools and districts must continue to focus on a building a culture of collaboration, communication, and interdependence whether instruction is administered in-person or through online learning platforms. In short, the integration of technology and educational technology frameworks contains barriers and limitations, preconceived perceptions, school culture and climate, and access to technology (Adams, 2019).

### *Teaching Beliefs, Attitudes, and Perceptions*

The beliefs, attitudes, and perceptions of teachers affect teaching and learning. Additionally, the pedagogic belief of teachers influences technological practices and processes of adopting or using technology for teaching and learning (Stoa & Chu, 2020). As schools and districts consider the PD needs of teachers to move them forward in growth and development, barriers must be considered (Instefjord & Munthe, 2017). Furthermore, teachers worldwide struggle to find effective ways to integrate technology and classroom use (Gros, 2016). As educators look into the future to determine educational technology preparations and relevance, they are faced with the fact that education systems will prepare students for jobs yet to exist and emergent technologies (Ally, 2019). Lastly, the perceptions, beliefs, and attitudes of teachers vary and provide invaluable insights that inform PD processes that support instructional technology (Powell & Bodur, 2019).

### *Technology Integration Plans and Effect*

Teachers face multifaceted challenges when trying to plan for technology integration and educational impact (Powell & Bodur, 2019). As schools and districts plan for technology integration and emergent technology advancements, the approach to PD plans should be considered as an effect on how teachers develop pedagogical knowledge of use of digital technology in the classrooms and within learning management systems (Hutchison & Woodward, 2018). Technology integration is an important acquired skill necessary for teachers to extend teaching and learning across multiple learning platforms including F2F, digital, blended, and online (Hutchison & Woodward, 2018). In the digital teaching era, it is imperative that districts, schools, and leaders provide support to develop digitally literate teachers capable of using technology to deliver curriculum and instruction (Ally, 2019). Furthermore, teachers must have effective, integrative technology PD with a planned focus aligned with content-appropriate technology skills and hands-on opportunities that build teacher capacity and educational impact (Gros, 2016).

## Drivers of Change

Prior to COVID, teachers and school systems were faced with adapting to online learning ushered in by the digital era and 21st century learning requirements outlined by the U.S. Department of Education. With the most recent changes in education and the COVID-19 pandemic, K–12 schools faced unprecedented disruptions. Schools were forced to close then migrate to online instruction through a learning management system such as Canvas (Ute, 2020).

### *Instructional Demands and Support*

The instructional demands for teachers and districts are at an all-time high (Ute, 2020). Likewise, the demand for digital, blended, or online learning models and materials has increased (Reinhart & Banister, 2018). As society becomes more dependent upon digital tools and interactions, the demand for digitally competent teachers has increased and imposed the need for technology integration within the educational landscape (Instefjord & Munthe, 2017). Additionally, societal demands create barriers to educational change. Instructional demands multiplied over the past few years as teachers transitioned from a F2F model to a fully online platform, some void of prior training, modeling of best practices, or accessible support (McQuirter, 2020).

### *Policy and Practice*

Implementing effective PD requires responsiveness to teachers' needs, the needs of learners, and the context in which teaching, and learning will occur (Darling-Hammond, 2016). The transition to teaching and learning in a digital, blended, or online platform was informed by policy and practice at a national level with the adoption of 21st century instructional standards. The shift to digital learning is supported by state and local leadership through state and local digital learning plans and policies focused on the implementation of digital learning standards (State Educational Technology Directors Association, 2019). Personalized learning, a component of teaching and learning in the digital, blended, or online platform is encouraged and supported by federal and state policy (Azukas, 2019). As districts and schools design PD for technology integration, a strong partnership between schools, PD providers, researchers, funding agencies, and

policymakers should be considered in order to achieve desired PD outcomes including building teacher capacity and developing higher levels of student performance (Xie et al., 2017).

### *School District's Role*

School administrators play a critical role in facilitating the use of educational technology, function as technology instructional leaders, and are the keys to successful implementation throughout the learning environment (Arpa & Kaya, 2020). The views and beliefs on school administrators about educational technology can change perspectives and behaviors toward technology, including teachers, students, and community members (Arpa & Kaya, 2020). Therefore, the role of a school administrator affects the overarching acceptance or rejection of educational technology for teaching and learning.

### *Forces Shaping Education and Technology Development*

There are forces shaping education and technology development across K–12 districts. The progress in education as related to the digital era ushered in adaptive and individualized learning, emerging technology, artificial intelligence, and internet advancements with a different way of learning aligned with 21st century standards and academic requirements (Ally, 2019). Districts across the United States are faced with a growing number of online learning communities in K–12, which increases the need to prepare teachers for online instruction, different competencies, and PD needs that align with digital, blended, and online instruction (Borup & Evmenova, 2019). Most recently, district across the nation have shifted to online learning during COVID-19 and presented

educators at all levels with the challenge of converting F2F instruction to online learning through a digital platform (McQuirter, 2020). The emphasis placed on 1:1 technology, increased demands of online engagement, content instructional issues, and the knowledge level of teachers are viewed as both barriers and benefits (Gros, 2016). The many forces placed on education systems, administrators, and teachers to transform on a moment's notice drastically changed the role of the teacher (Ally, 2019). The basic principles of building upon strengths, current practices, teacher collaboration, and focused, systemic, multilevel implementation supports are viewed as building blocks for innovative change across all grade levels and curriculum (McQuirter, 2020).

### *Professional Development Platforms*

PD is not a one-size-fits all approach or platform (Powell & Bodur, 2019). As schools and districts consider teacher PD to support instructional technology, they must consider investing in PD to ensure digital preparedness to educate students in a virtual platform using emerging technologies (Ally, 2019). Teaching and learning in the digital age requires accessibility and flexibility of learning opportunities, as demonstrated during the COVID-19 pandemic crisis, which allows teachers and learners to connect through digital, blended, or online platforms (Ally, 2019; Kaden, 2020). PD that provides teachers with active learning opportunities that increase skills and knowledge prompted change in classroom practices (Moore et al., 2017). Educational learning communities, including K-12 teachers, are made up of learners that seek opportunities to acquire skills and knowledge relevant to work, play, and interests (Riegel & Mete, 2017). Additionally, the PD platforms for the K–12 teachers provide learning opportunities aligned with research-

based best practices, instructional strategies, and implementation to connect what is learned then applied to existing classrooms (Moore et al., 2017).

## Best Practices: Use of Technology in the Classroom

Through teaching and learning, learning organizations create and develop best practices, including the use of technology in the classroom, whether in-person, a blended or digital space, or online. As districts, schools, and teachers collaborate through decision making processes supported by research-based best practices, the integration of technology and usage can make a substantial difference across the educational system and societal structures (Solone et al., 2020). The increase on online and blended learning instruction produced the need for quality PD that fostered learning and change focused on the development of best practices (Moore et al., 2017).

### *Effectiveness*

The teacher's use of effective practices ultimately determines institutional adoption, especially when related to blended learning practices and (Moore et al., 2017). The beliefs of teachers operating across digital learning platforms should be supported through proper background knowledge and relevant instructional practices to increase effectiveness of the instructional process (Masullo, 2017). Additionally, PD training is expected to fulfill an area of opportunity to educate teachers in effectiveness to blend teaching and learning strategies (Moore et al., 2017). In order for PD to be effective, the training focus must be relevant to the teachers' needs, built upon the strengths of current practices, and offered through ongoing, job-embedded instructional support for the transition from traditional to digital, blended, or online instruction (Xie et al., 2017).

Finally, PD should target the growth and development of every teacher through ongoing, highly effective, subject and grade specific support through targeted professional training (Kaur, 2020).

### *Effective and Continuous Professional Development*

The advancements in technology increased the expansion of 1:1 technology, which allowed teachers and students to access learning anywhere, anytime (Kaur, 2020). In addition, an increased need arose for teachers to access effective PD. PD trainings and activities should be tailored to the technologies accessible to teachers and aligned with identified teacher beliefs, attitudes, and needs (Avci et al., 2019). There is a growing need to provide teachers with PD opportunities that clarify and construct understandings of personalized learning, along with the development of knowledge and skills with classroom application (Azukas, 2019). Additionally, teacher education and PD must continue to adjust and equip teachers with the necessary tools and skills required for 21st century classrooms (Moore et al., 2017). When implemented effectively, PD can promote changes including an increase in teacher knowledge and skills that prompt changes in classroom practices (Azukas, 2019). Current classroom instruction requires technology integration through technology use and employing teachers who are equipped for teaching and learning through digital, blended, and online instructional platforms. In order for teacher to be effective, they must have access to effective technology integration PD focused on technology, skills, hands-on opportunities, and aligned with teachers' needs (Gros, 2016).

**Barriers, Constraints, and Shortcomings**

Changes in education are not without barriers, constraints, and shortcomings. There are forces in education and society that place a sense of urgency on the education system that require change and drastically impacts the role of the teacher (Ally, 2019). Barriers, constraints, and shortcomings can lead to elevated levels of frustration, discouragement, and a negative impact on the education system at all levels (Coleman et al., 2016). Identification of barriers can change the trajectory of the educational systemic approach when trying to meet the requirements for modern day instruction. Schools and systems must take into account common barriers found in research when planning and providing PD for teachers including access to technology, teachers' vision for technology, beliefs about technology usefulness, time, and PD in relation to the use of technology in classrooms (Instefjord & Munthe, 2017).

Barriers or constraints pose a problem for all stakeholders who are trying to integrate technology across the curriculum. Technology can enhance the overall experiences for teachers and students when embraced by school systems and school leaders who can function as technology leaders (Ugur & Koc, 2019). Barriers to technology include limited adoption and necessary training of teachers to use technology across educational context (Fernandez, 2017). Technological advances have changed the world, yet many forces work against the educational system and the traction in learning organizations including Industrial Age education policies, standardization, teaching practices, and outdated instructional approaches (Snape, 2017).

Educational technology integration is a multidimensional process and contributing variables to accelerate success levels and aid in the reexamination of barriers to improve infrastructure, PD, and a system approach (Izmirli & Kirmaci, 2017). Barriers identified as first- and second-order impact meaningful classroom instruction (Paulus et al., 2020). First-order barriers include reliable internet access, device ratios, and infrastructure, whereas second-order barriers involve teachers' attitudes and beliefs about technology and sufficiency levels (Paulus et al., 2020). Second-order barriers are factors within the teachers including attitudes, beliefs, and skills (Gros, 2016). Technology in education requires constant change, can be problematic, and teachers are faced with a myriad of platforms and digital tools that impact teaching and learning (McQuirter, 2020).

**Digital Literacy Levels and Competency**

Building teachers' capacity in the area of digital literacy and competency is a vital component to address identified barriers or constraints of technology integration. To address and raise quality of teaching and learning, educational institutions must focus on providing training and products accessible through immersive, real-world instructional experiences (Fernandez, 2017). The teaching and learning requirements embedded in 21st century learning requires teachers to operate with diverse levels of digital literacy and competency, use online teaching and learning strategies, and develop a new way of thinking to successfully take offline learning to digital, blended, or online platforms (Tucker, 2020). When developing and planning for instruction across platforms, teachers must be aware of the forces that shape education and the digital competencies required for teaching and learning (Ally, 2019).

## Summary and Conclusions

This literature review included an exploration of K-12 teachers' perceptions of PD that supports the use of instructional technology. Chapter 2 included the literature search strategy, the conceptual framework of SAMR, and how this model is applied to PD to support instructional technology use. In this chapter, the literature review conducted highlighted seven themes including educational principles and approaches, technology criticisms and contrary views, challenges of technology in the classroom, drivers of change, best practices, barriers, constraints, and shortcomings and digital literacy levels.

The literature review indicated that PD has the positive potential to affect changes in education. Additionally, the literature review indicated that the SAMR model used with mobile devices can transform learning (Crompton & Burke, 2020). There are various frameworks at work across K-12 organizations to effectively support teaching and learning through the integration of educational technology. Although scholars noted that the SAMR framework should be used to evaluate educational technology integration, the research study and methodology for this study will seek to examine teachers' perceptions regarding PD that supports the use of instructional technology The literature review also revealed emergent topics for consideration as they relate to education principles and approaches including the SAMR model, a learner-centered classroom, differentiated instruction, collaborative learning, and experiential learning. All the highlighted components are worthy of exploration to inform the current study.

Through a basic qualitative research design, my study addresses the gap in literature, a limited number of studies available from the perspectives of K–12 teachers that incorporate their voice regarding PD to support instructional technology. The literature review supported the research problem for my dissertation, an increased need to understand the perceptions of K–12 teachers regarding PD to support use of instructional technology. The conceptual framework and literature indicated the importance of incorporating input from teachers to determine PD needs relevant to frontline experiences, those working with integration of technology and tools, and reframing thinking for teaching and learning.

The focus of the literature review was to explore K-12 teachers' perspectives of PD that supports the use of instructional technology. An overview of the qualitative approach is provided in Chapter 3. Chapter 3 includes the research design and rationale, the role of the researcher, methodology, issues of trustworthiness addressing credibility, transferability, dependability, confirmability, reliability, ethical practices, and a summary the main points.

# Chapter 3: Research Method

## Introduction

The purpose of this basic qualitative research study was to investigate K–12 teachers' perceptions of PD that supports the use of instructional technology. This basic qualitative study connects the problem addressed and teachers' perceptions of PD to support instructional technology. The exploration of K–12 teachers' perceptions informs the field of education regarding teachers' voices and PD design and implementation to support instructional technology. In Chapter 3, I describe the methodology used throughout the research study, while expanding on the design of the study and rationale for the basic qualitative approach. Additionally, I describe the methods and procedures used in the data collection and analysis process. Finally, I review the issues of trustworthiness, internal and external validity, dependability, confirmability, and reliability measures, along with assurance of ethical procedures, safeguards, and requirements.

## Research Questions

The purpose of this basic qualitative research study was to investigate K–12 teachers' perceptions of PD that supports the use of instructional technology. The research questions focused on teachers' perceptions and experiences. To explore the perceptions and experiences of K–12 teachers regarding PD to support the use of instructional technology, this qualitative research study was designed to address the following questions:

RQ1: What are K–12 teachers' perceptions and experiences of the PD provided by their school districts to support the use of instructional technology?

RQ2: How do K–12 teachers put into practice their learning from PD to support the use of instructional technology?

## Research Design and Rationale

I used the basic qualitative study design to examine K–12 teacher's perceptions of PD that supports the use of instructional technology. A basic qualitative approach was an appropriate design for the research study based on the belief that knowledge is constructed by individuals in a continuous fashion as they engage and make meaning of experiences (Merriam & Tisdale, 2016). Furthermore, the basic qualitative research design aligns with social science research that gathers nonnumerical data and interprets meaning from the data collected to understand social life through the study of a selected population or place, in this case K–12 teachers (Crossman, 2020). This basic qualitative study design captured the meanings constructed by K–12 teachers through engagement in the educational world they are interpreting (Merriam & Tisdale, 2016). I followed the guidelines suggested by Crossman (2020) to gather and interpret data using a systematic and meticulous process to transcribe, analyze, and code emergent themes and trends.

Before selecting a basic qualitative research design, I considered alternate research designs. Initially, I considered a case study design. A case study research method would have employed various sources of data, including direct observations, interviews, documents, artifacts, and additional sources (Ravitch & Carl, 2016). After much consideration, I decided that the case study approach was not the best approach for

this research topic. I also considered a mixed-methods approach, which combines aspects of qualitative and quantitative methods, and I quickly realized that the mixed-method approach required a substantial sample size for an effective study and did not align with my research questions or goals of the study (see Ravitch & Carl, 2016). The basic qualitative research design was most suitable because it allowed for flexibility and adaptability to changes within the research environment and created an in-depth understanding of perceptions and social processes comprised in everyday life (Crossman, 2020).

The study was designed to explore the meaning of experiences (see Merriam & Tisdale, 2016). In this case, the experiences included K–12 teachers and their perceptions of PD to support the use of instructional technology. Since the study aligned with exploring the meaning of experiences, a quantitative or mixed-methods approach was not appropriate. A quantitative approach would have been focused on quantifying the research problem through numerical data (see Crossman, 2020). The mixed-methods approach includes both qualitative and quantitative research data, which does not align with the focus of this study. The basic qualitative research approach selected aligned with the purpose and research questions for this study. Ultimately, the basic qualitative research approach is selected to allow a researcher to understand unique situations and interactions within a given context (see Patton, 2015).

## Role of the Researcher

I am an assistant principal of an intermediate school, Grades 5 and 6, and a former elementary teacher. My role as an administrator involves managing curriculum and

instruction, organizing, and facilitating professional learning community and learning log (data) meetings, teacher observations and evaluations, as well as other administrative tasks or duties. For this study, I assumed the role of the researcher and active participant to design, recruit, interview, transcribe, analyze, verify, and report the research findings (see Bailey, 2008; Fink, 2000). Teachers from my school district or those I supervise directly were excluded from the study. Therefore, the participants included in this research study were K–12 teachers throughout the United States who volunteered to participate and fulfilled the participation criteria.

PD opportunities offered within my school are determined and scheduled by district administrators. Teachers can participate in the district level or self-selected PD offered through various vendors. I have administrative rights within my district's evaluation management system to approve staff submissions of completed PD or professional growth points. I do not control, formally or informally, participants' rights, benefits, or personal interests aligned with PD. I started an optional coffee talk session in my school to encourage teacher leadership, networking, and opportunities for teachers to share various teaching strategies, including technology-enhanced tools and more, used within their classrooms. Teachers and staff members choose whether to participate in the optional coffee talk sessions.

I have experience with and participated in PD opportunities that support the use of technology, which could present as a possible bias. Although I interviewed K–12 educators who participated in PD opportunities, I took caution not to assume or impart personal or professional bias regarding another's experiences with PD. I addressed

potential and professional bias by interviewing participants whom I do not directly supervise. I did not encounter any potential conflicts or issues with personal or professional relationships that I have with the participants involved in my study. The only personal connections that I had with the participants included colleagues or network participants who recommended an individual or if the participant was an educator within my school district, but not a teacher in the school where I am an administrator.

## Methodology

In the following section, I describe the methodology for this basic qualitative research study, participant selection logic, instrumentation, procedures for recruitment and interviews, data collection, and analysis. I designed this basic qualitative research study to capture the perceptions of K–12 teachers regarding PD that supports the use of instructional technology through interviews. Qualitative researchers are focused on depth rather than breadth and understanding specific situations, individuals, groups, or moments in time that are important or revealing (Rubin & Rubin, 2012). Therefore, the interview process allowed natural dialogue to occur and teachers to freely share viewpoints and responses to the interview questions aligned with this study.

### Participant Selection Logic

In qualitative research, interviewing is the most used research method in the human and social sciences (Gubrium et al., 2012). Qualitative interview studies delve into individual experiences and then relate to other participants' experiences to understand a broader range of perspectives and experiences about a particular phenomenon or topic (see Ravitch & Carl, 2016). The sample size for this study was

small, nine teachers, to gather perspectives and collect data to reach saturation. Saturation occurred when the sample size was deemed satisfactory and at a point in data collection and analysis where no added information was produced from the interviews (Gubrium et al., 2012; Patton, 2015). Therefore, the participation selection logic included K–12 teachers, a small sampling that yielded robust data related to the qualitative study (see Hennink et al., 2019; Patton, 2015).

I used purposive selection as the primary sampling method in this qualitative study (Ravitch & Carl, 2016). The selection criteria included K–12 teachers who have participated in PD to support the use of instructional technology. The participants included K–12 teachers with experiences of teaching in a traditional setting with a transition to a digital, online, or blended learning platform and who were located in school settings throughout the United States. Also, the participants had technology and internet access through a computer or mobile device with microphone and/or webcam, which allowed them to be interviewed via Zoom online conferencing platform (see Archibald et al., 2019; see Gray et al., 2020; see Mirick & Wladkowski, 2019). Additionally, I used a secondary method, known as snowball or chain sampling, another type of purposeful sampling to select and recruit participants. Snowball or chain sampling allowed me to start with a few relevant and information-rich interviewees and then ask participants for additional K–12 teacher contacts who could provide different or confirming perspectives (see Patton, 2015; see Ravitch & Carl, 2016).

**Instrumentation**

In this basic qualitative research study, I used an interview guide as the primary data collection instrument. The interview guide included an interview protocol, procedures, and 15 interview questions (see Patton, 2015; Rubin & Rubin, 2012). The interview guide was more than a list of interview questions; rather, the guide served to elevate the procedural level for interviewing and included a script of what to say before and after the interview, prompts for the interviewer to gather informed consent, and a reminder of the information aligned with the purpose of the study (see Jacob & Furgeson, 2012; Patton, 2015). The interview guide aided me as the interviewer with asking questions, as obtaining an answer is a much harder task than it appears (see Jacob & Furgeson, 2012). Qualitative research depends heavily on the ways people see, view, approach, and experience the world and make meaning of their experiences (Ravitch & Carl, 2016). Therefore, the qualitative interview was the data collection source used to answer the research questions in this study (see Rubin & Rubin, 2012).

The interview guide (Appendix A) was fashioned after the in-depth semistructured qualitative interview approach including an opening to introduce myself, an introduction that explained the purpose of the interview, key questions, and a closing that asked permission to follow up and sought recommendations for additional interviewees (see Myers & Newman, 2007; Rubin & Rubin, 2012). The interview questions (see Appendix B) were aligned with the research topic, including specific questions asked of all respondents, and allowed participants to respond freely to each question (see Ravitch & Carl, 2016). The questions helped me organize and guide the

interview discussion to ensure all questions would be covered (see Myers & Newman, 2007). The interview guide also allowed for openness, flexibility, and improvisation to help the interview feel more conversational and natural.

The creation of the interview guide included consultation and direction from my dissertation committee chair, committee members, and methodologist. The committee members addressed alignment of research and interview questions, along with interview form and style. Ultimately, the interview guide and questions focused on generating narratives that use open-ended questions, probing when necessary, and the development of emergent themes discovered through data collection and analysis (see Guest et al., 2020).

**Procedures for Recruitment, Participation, and Data Collection**

My dissertation committee and Walden University's Institutional Review Board (IRB) reviewed and approved my research study (05-11-21-0673173). I posted the social media flyer (see Appendix D) and sent invitations to participants (see Appendix C) to join the research study through social media platforms, such as Facebook and LinkedIn, and through recommendations from initial participants. Participants who met the criteria for participation engaged in the interview process upon my receipt of their informed consent. Upon receipt of the consent forms, I responded to each participant to discuss availability and to schedule a Zoom web-conferencing recorded session to conduct each interview. I sent participants a follow-up email with a Zoom invitation including the web-conferencing link, session code and password, and a copy of the interview guide (see Appendix A).

The data collection and analysis process included member checking to address credibility. The member-checking strategy included asking each participant to review the overall findings (see Birt et al., 2016; Hagens et al., 2009; Rubin & Rubin, 2012). Additionally, my dissertation chair and committee analyzed the interviews and findings to support credibility of the qualitative research study (see Birt et al., 2016; Shenton, 2004). A copy of the transcribed interviews was submitted to my methodologist for verification that the data collection was meaningful and applicable to the research study. Finally, the feedback received from participants was used for clarification and a means to confirm and conclude the data collection process.

**Data Analysis Plan**

I recorded the interviews using two audio recording apps, Voice Recorder and Otter. The interviews were transcribed using the online audio transcription service and manual transcription. The transcripts were reviewed and coded using hand and digital coding. The coding process was progressive in nature, using a table to code the frequency of particular terms, phrases, and themes conveyed during the interviews. The code table was used to compare and draw conclusions among the added information obtained through the interviews and data collection process and the information provided in the literature review in Chapter 2. Multiple rounds of coding were applied to the data collected. The initial round of coding was completed using a line-by-line coding method. I highlighted terms and phrases applicable to the research questions. The next round of coding was used to find emergent themes conveyed. The analysis and synthesis process

used during each round of coding developed into categories that aligned with the conceptual framework that informed this research study.

The members of my dissertation committee provided guidance and instruction to develop understanding and analytic skills throughout the coding process. Additionally, the members of my dissertation committee engaged in discussion, collaboration, and analysis of the interview, transcription, and coding processes that conveyed the findings for the study. Finally, the study's conclusions aligned with the research questions, data collection, and emergent themes, reviewed and confirmed by the dissertation committee.

## Issues of Trustworthiness

Trustworthiness is a means to affirm the findings of the study are faithful to the participant's experiences (Ravitch & Carl, 2016). Therefore, throughout the study, I followed steps to address credibility, transferability, dependability, and confirmability. The strategies I used to affirm trustworthiness are provided in the following sections.

### Credibility

Credibility is the researcher's ability to prove internal validity and that qualitative research study is believable, which is an important part of the critical research design (Ravitch & Carl, 2016). To ensure credibility, I used member checking, reflective journaling, semistructured interviews, and emergent coding (see Birt et al., 2016; Shenton, 2004). The selected processes are vetted qualitative research procedures (Patton, 2015; Ravitch & Carl, 2016; Shenton, 2004). Member checking served as a means for participants to corroborate findings and produce information not shared during initial data collection (see Candela, 2019). Additionally, I followed the qualitative research

guidelines and included tactics to ensure honesty from participants when contributing data by explaining that participation in the research study was voluntary and frank responses are encouraged (see Shenton, 2004).

**Transferability**

Transferability, or external validity, is a way that qualitative researchers ensure that the study is applicable, or transferable, to a broader context while maintaining context-specific richness (Ravitch & Carl, 2016). For this study, I used the background information that supports the study and detailed descriptions from participants' experiences. I also used reflective journaling throughout the interview and data analysis processes to strengthen the trustworthiness of the findings (see Patton, 2015).

**Dependability**

Dependability refers to the stability of the data, consistent and stable over time (Ravitch & Carl, 2016). To establish dependability, I provided an in-depth description of the processes used throughout the research study (see Merriam & Tisdale, 2016). The descriptions painted a clearly defined picture for audiences and future researchers to conduct a similar study and potentially obtain the comparable results (see Shenton, 2004). If desired, future researchers can use the research design, data collection methods, and reflective processes to recreate the study (see Merriam & Tisdale, 2016).

**Confirmability**

Confirmability, or objectivity, establishes that the researcher sought to have confirmable data with neutrality and reasonable freedom from biases (Ravitch & Carl, 2016). Confirmability was established through the transparency of explanations provided

throughout the study related to my topic of research, addressing any personal or professional biases, outlining the data collection processes and results, and using member checking. Member checking was used as a check in process with participants during data analysis which verified accuracy of the data collected. Additionally, I used reflective journaling to address any personal opinions during the data collection and analysis processes. Finally, I ensured confirmability through taking necessary steps to assure the study's findings are the result of the participants' experiences and ideas, rather than any opinions or preferences of me as the researcher (see Shenton, 2004).

**Ethical Procedures**

Ethical procedures respect and protect the rights of participants and serve as a guide for research requirements (see Rubin & Rubin, 2012). Walden University follows federal regulations and requires submission of each research study to the IRB. Prior to data collection, I obtained approval from the Walden University IRB on May 11, 2021, with the approval number 05-11-21-0673173. The IRB checked the study design, the interview guide and questions, participant's consent, and compliance of confidentiality guidelines. The documents submitted to IRB provide descriptions of how I ensured and adhered to confidentiality of the participants and the protection of confidential information obtained during the participant interviews.

I conducted participant recruitment with an invitation to participate in the study and engaged in the snowball approach to recruit additional participants recommended by participants for the study (see Patton, 2015). Additionally, each participant agreed to be interviewed received information on voluntary participation in the study, privacy rights,

including confidentiality assurance and data protection, and a consent form. Participants were required to submit an emailed consent, stating "I Consent" before participating in the interview process.

Before starting the interview, I read an introductory script, reminding the participant that participation is voluntary. Additionally, the participant was reminded that the information provided is kept confidential and secured in a safe place for 5 years and then destroyed. Each participant was assigned a participant number to use in the study notes, reflective journal, coding documents, and results. The participant number protected the participants and maintained confidentiality throughout the study and publication of findings. Finally, I documented personal information and the data collected using a paperless approach stored on a password-protected computer.

## Summary

Chapter 3 provided an introduction that highlighted the purpose of this basic qualitative study to investigate K–12 teachers' perceptions of PD that supports the use of instructional technology. A basic qualitative research design was selected for this research study to showcase the knowledge constructed by K–12 teachers as they shared their experiences. Additionally, I defined and explained my role as the researcher, addressed researcher biases, and the management of power relationships. I provided an in-depth description of the methodology used for this research study, including a small sampling size and purposive selection with specific participant criteria. The criteria for participation included K–12 teachers who participated in PD to support the use of instructional technology, experienced teaching in a traditional setting with a transition to

a digital, online, or blended learning platform, and from a school setting located in the United States. I presented an interview guide as the primary research instrumentation for data collection, along with specific procedures for recruitment, participation, and data collection. Finally, I addressed issues of trustworthiness, including my plan that established credibility, transferability, dependability, confirmability, and ethical procedures. In Chapter 4, I present the research results based upon a summary of the data collection and analysis, along with evidence of trustworthiness.

# Chapter 4: Results

## Introduction

Chapter 4 consists of the following sections: setting, demographics, data collection, data analysis, evidence of trustworthiness—credibility, transferability, dependability, and confirmability—results per research question, and a summary of the findings. The purpose of this basic qualitative research study was to investigate K–12 teachers' perceptions of PD that supports the use of instructional technology. By exploring K–12 teachers' perceptions, the knowledge acquired from this study will help inform the field of education on how teachers' voices can shape PD design and implementation to support instructional technology usage aligned with the conceptual framework based on Puentedura's (2009) SAMR model. The insights gained from studying teachers' perceptions may offer an increased understanding of PD to support instructional technology.

In this chapter, I provide an overview of the research design and summarize the findings. First, I describe the setting for the research study and provided demographic information regarding the participants. Next, I explain the data collection and analysis processes and procedures to provide evidence of trustworthiness. I used semistructured interview questions to allow participants of the study to feel empowered to answer openly and honestly in response to each question. I reviewed the participants' interview responses and analyzed and organized the data using multiple rounds of manual coding to identify terms, phrases, and themes conveyed during the interviews. Finally, I present my

research results, organize the data based on the themes, and conclude the chapter with a summarization of the findings.

## Setting

I conducted the semistructured interviews from my home office. Participants self-selected their setting for the web-conferencing interview and accessed the Zoom web-conferencing platform through an individual invitation and online link. Seven participants were at home during the web conferencing interviews. Two participants were at work, but alone in their classroom or office when participating in the interview. One interview was briefly interrupted due to internet connectivity issues with a slight pause during the interview. The internet connectivity issue resolved itself with no further interruptions. The average length of all interviews was 45 minutes. I was not aware of any personal or organizational conditions presented that influenced the interpretation of the study results.

The research study was conducted during the worldwide COVID-19 pandemic with the data collected shortly after the one-year anniversary of the U.S. shutdown. Safety measures and social distancing requirements were in place during the time of data collection across many school districts throughout the nation. The participants included in the study taught during the COVID-19 pandemic with variations of in-person, hybrid, or virtual instruction for the 2020–2021 school year. Zoom web-conferencing was selected as the platform to offer participants a means to interview via an online access point and adhere to social distancing guidelines (see Archibald et al., 2019; see Gray et al., 2020; see Mirick & Wladkowski, 2019).

## Demographics

Participants' teaching experiences ranged from 2 to 25 years. The characteristics of participants including participant ID, years of teaching, grades taught, and teaching experiences are outlined in Table 1.

**Table 1**

*Participant Demographics*

| Participant | Years teaching | Grades taught | Teaching experiences | | |
|---|---|---|---|---|---|
| | | | Traditional | Blended | Online |
| P1 | 5 | Third grade | X | X | X |
| P2 | 25 | High school | X | X | X |
| P3 | 4 | Fourth grade | X | X | X |
| P4 | 19 | Kindergarten | X | X | X |
| P5 | 19 | Middle school | X | X | X |
| P6 | 25 | Middle school | X | X | X |
| P7 | 2 | First grade | X | X | X |
| P8 | 12 | Kindergarten | X | X | X |
| P9 | 5 | Middle school | X | X | X |

Two of the participants indicated teaching as a second career with previous careers in business administration and the medical field. Participants included eight women and one man. All participants were located in a school setting in the United States, but from different locations. Of the nine participants included in this study two participants were located in New York, four participants were located in Indiana, one was in Colorado, one was in Maryland, and one was in Delaware. The number of years of teaching experience varied from 2 to 25 years. All participants had teaching experience in traditional, blended, and online instructional platforms.

## Data Collection

I received IRB approval on May 11, 2021, (approval number 05-11-21-0673173) to conduct the basic qualitative research study with semistructured interviews. Upon receipt of IRB approval, I posted the social media flyer (see Appendix D) to Facebook and LinkedIn. I emailed a participant invitation (see Appendix C) to participants who replied to the social media flyer. I emailed 10 participant invitations and consent forms and received replies of "I consent" from all potential participants.

After I received the "I consent" email responses, I emailed each participant to request preferred dates and times that worked with their schedules to participate in the interview. Upon receipt of preferred dates and times from each participant, I sent a follow-up Zoom web-conferencing invitation and link with the confirmed date and time for the interview. After reviewing the data collected from nine interviews, I determined an acceptable level of data saturation as the participants' information became repetitious (see Ravitch & Carl, 2016). Data collection began on May 23, 2021, and ended on June 28, 2021.

I used an interview guide (see Appendix A) and interview questions (see Appendix B) that included a consistent opening statement and semistructured interview questions that I designed to engage participants in open dialogue and to elicit open-ended responses from participants. I used a hard copy of the interview guide and questions for reference, notetaking, and journaling. I also completed reflective journaling during data collection and analysis. Reflective journaling served as a tracking tool to manage dependability and confirmability of the research study.

I recorded the semistructured interviews using two different audio recording apps, Otter and Voice Recorder, on my cell phone and iPad, which are both password-protected to ensure participant confidentiality. After I completed each interview, I transferred the audio recorded files to my password-protected computer. I manually transcribed all interview audio files, which were saved and stored on my password-protected computer.

After the initial round of manually transcribing, I revisited each transcript and thoroughly reviewed each while listening to the audio recording of each interview. I used this process consistently to verify the accuracy of each transcript and to acquire data from each participant. After verifying the transcript data, I determined reasonableness in terms of the initial transcription. I made minor edits to each transcript removing typos to reflect accuracy of each audio recording. I found minor transcript errors based on the audio recordings. Once verified for accuracy, I analyzed each transcript using a coding process including initial codes, patterns, meaning, and themes. No variation in the data collection from the plan outlined in Chapter 3 occurred. I did not experience any unusual circumstances during the data collection process.

## Data Analysis

For this basic qualitative study, I focused on the purpose of the study and investigated K–12 teachers' perceptions of PD that supports the use of instructional technology. The study was conducted to gather insights from teachers' perceptions and experiences related to PD that supports the use of instructional technology. I applied qualitative analysis methods suggested by Shenton (2004) and Saldana (2016). I used emergent coding based on participants' responses (see Saldana, 2016). The data analysis

process was iterative and included a multilevel approach to organize and review the data collected.

The first level of data analysis included becoming familiar with the data by listening to the audio recordings and reviewing transcripts of each interview multiple times. I focused on depth rather than breadth to understand the specific situations and individuals or moments in time that were important or revealing in the data collected (see Rubin & Rubin, 2012). For the next level of analysis, I followed Saldana's (2016) method of coding including initial coding; a second round of coding to produce categories, meanings, and patterns; and a third round of coding to identify emergent themes. I used manual coding to create tables to place and track key terms, words, and phrases, rather than relying on a computer program.

The coding process allowed me to work closely with the data collected, move from initial coding of the interviews to data absorption, identification of emergent codes and themes using a codebook, including a list of codes that were organized and reorganized multiple times to comb through the data codes and identify the emergent themes. I identified 41 initial codes, recorded the repeated codes as key words, terms, or phrases, regrouped the codes, then combined and organized the codes by themes aligned with the research questions. I then analyzed the meanings and patterns associated with specific phrases to identify emergent themes. The coding documents included key terms, phrases, meanings, patterns, and themes that were then compiled into a comprehensive document for analysis and alignment with research questions. I developed eight themes to

reflect the overall results. Table 2 shows how codes were organized, how the codes mapped to themes, and how themes related to the research questions.

**Table 2**

*Codes Organized Into Themes Related to Research Questions*

| Codes | Themes | Research questions |
|---|---|---|
| PD sessions & training offered<br>PD supports provided & desired<br>Varied PD platforms & types<br>Various PD topics | K-12 teachers receive professional development that supports the use of instructional technology but desire more preparation, training, practice, and follow up. | RQ1: What are K-12 teachers' perceptions and experiences of the professional development by their school districts to support the use of instructional technology? |
| Attitudes and beliefs<br>Barriers<br>PD working vs. not working<br>Instructional strategies offered or lacking | PD and training K-12 teachers received for instructional technology focuses on access to instructional tool or program but provides little information on implementation and application. | |
| Self-teaching concerns<br>Simplified processes<br>Interactive engagement<br>Modeling & implementation<br>Balance<br>Networking & collaboration | K-12 teachers spend more time self-teaching and collaborating with colleagues to learn how to use and implement instructional technologies than is provided by schools or districts. | |
| Multiple PD options<br>Ongoing PD desired<br>Challenges and barriers<br>Follow-up PD needed<br>Simplified instruction<br>Build capacity<br>Adaptation<br>Relevance<br>Continuous | K-12 teachers perceive the professional development provided by their school district to support the use of instructional technology as baseline or a starting point with additional support needed to fully implement and apply to teaching and learning. | |
| Usage and implementation<br>Teacher learning<br>Informative<br>Improved performance levels<br>Real-world application<br>Adapted learning | K-12 teachers believe their school districts expected implementation and usage of instructional technologies on a daily or regular basis.<br>K-12 teachers have incorporated instructional technologies learned from district level or various forms of professional development to meet the learning needs of their students. | RQ2: How do K-12 teachers put into practice their learning from professional development to support the use of instructional technology? |
| Accessibility issues<br>Budgetary issues<br>Negative attitudes<br>Time constraints<br>Limited skills | The majority of K-12 teachers perceived their learning from professional development to support the use of instructional technology as baseline or introductory with a district expectation for teacher to learn instructional technologies prior to student engagement regardless if the PD meets the learning needs of teachers. | |
| Additional support<br>Functionality and utility<br>Stakeholder input<br>Instructional technologies<br>Support needed<br>Requirements<br>Traditional vs. modern classroom | K-12 teachers felt a responsibility to learn from professional development to support the use of instructional technology and create a classroom environment, in-person and online, that incorporated collaboration, engagement, and adaptations to maximize teaching and learning. | |

Table 3 includes an overview of the eight themes related to the research questions. The first theme indicates that K–12 teachers desired more preparation, training, practice, and follow up. The second theme calls attention to teachers' access to an instructional tool or program with little information provided by the district or school regarding implementation and application. The third theme spotlights more time spent self-teaching. The fourth theme focuses on K–12 teachers' indication that they were recipients of baseline or starting point PD and additional support was needed. In the fifth theme, K–12 teachers expressed that they were expected to implement and use learning from PD. The sixth theme points out that K–12 teachers incorporated learned instructional technologies throughout teaching and learning. The seventh theme spotlights that K–12 teachers put into practice the baseline or introductory learning received from PD sessions. The eighth theme notes K–12 teachers believe a responsibility to learn from the PD sessions.

**Table 3**

*Themes Related to Research Questions*

| Themes | Research questions |
|---|---|
| K-12 teachers receive professional development that supports the use of instructional technology but desire more preparation, training, practice, and follow up.<br>PD and training K-12 teachers received for instructional technology focuses on access to instructional tool or program but provides little information on implementation and application.<br>K-12 teachers spend more time self-teaching and collaborating with colleagues to learn how to use and implement instructional technologies than is provided by schools or districts.<br>K-12 teachers perceive the professional development provided by their school district to support the use of instructional technology as baseline or a starting point with additional support needed to fully implement and apply to teaching and learning. | RQ1: What are K-12 teachers' perceptions and experiences of the professional development provided by their school districts to support the use of instructional technology? |
| K-12 teachers believe their school districts expected implementation and usage of instructional technologies on a daily or regular basis.<br>K-12 teachers have incorporated instructional technologies learned from district level or various forms of professional development to meet the learning needs of their students.<br>The majority of K-12 teachers perceived their learning from professional development to support the use of instructional technology as baseline or introductory with a district expectation for teacher to learn instructional technologies prior to student engagement regardless if the PD meets the learning needs of teachers.<br>K-12 teachers felt a responsibility to learn from professional development to support the use of instructional technology and create a classroom environment, in-person and online, that incorporated collaboration, engagement, and adaptations to maximize teaching and learning. | RQ2: How do K-12 teachers put into practice their learning from professional development to support the use of instructional technology? |

As participants responded to the first set of interview questions, they provided their perceptions and experiences of PD provided by their school districts to support the use of instructional technology. The participants discussed the importance of PD that was relevant to K–12 instructional platforms including traditional, digital, and online. The first set of themes I discovered from the data focused on the desired need for additional PD preparation, training, practice, and follow up. Words and phrases such as *baseline*, *starting point*, or *provided little information* highlighted the depth and breadth of the codes aligned with the themes related to additional training, instructional tools or programs access, and additional district or school supports desired. The second set of themes derived from the data focused on how K–12 teachers put into practice the learning from PD that supports the use of instructional technology. Words and phrases such as *expected implementation*, *expected daily use*, *incorporated learning*, *baseline*, *introductory*, and *responsibility to learn* made up the codes aligned with the emergent themes.

**Discrepant Cases**

There were nine participants in this study and all of the K-12 teachers participated in PD to support the use of instructional technology. Although there were slight variations in regard to the level of PD experienced by each participant to support instructional technology, no discrepant cases were found. The similarities and variations were less than discrepant.

## Evidence of Trustworthiness

The trustworthiness of this qualitative study was supported by multiple approaches considered including establishment of credibility, transferability, dependability, and confirmability (see Patton, 2015). The initial challenge considered for this study was the worldwide COVID-19 pandemic, social distancing, and limited participant availability. The trustworthiness of the study is made evident through the discussion of the research, reliability, and validity which helped to guarantee sound data collection (see Shenton, 2004).

### Credibility

To establish credibility for this study, I followed the methods of data collection outlined in the methodology section of my dissertation. During my research design, data collection and analysis processes, I incorporated multiple methods and approaches to ensure the study's findings as believable and truthful (see Patton, 2015; Shenton, 2004). I established credibility by using the following approaches: semistructured interviews of K–12 teachers who met the participant criteria, member checking, reflective journaling, and emergent coding. Member checking it helped to establish credibility through communication with each participant to ensure that I captured the significance of their responses. Overall, the participants were satisfied with their member checking correspondence. Seven participants responded to member checking and noted appreciation of being included in the study. One participant responded to member checking with additional thoughts to add to their interview data. The additional thoughts were minimal and added clarification to previous statements.

**Transferability**

In qualitative research, transferability, or external validity, ensures that the study is applicable or transferable to a broader context and the findings of the study could be applicable to other situations (see Patton, 2015; Ravitch & Carl, 2016; Shenton, 2004). To establish transferability, I used the background information that supported the study and provided detailed descriptions from participants' perceptions and experiences. I also employed reflective journaling throughout the interview and data analysis processes (see Patton, 2015). I used reflective journaling which allowed me to keep my thoughts separate from the participants'. The detailed descriptions of the literature that supported my study along with the detailed descriptions of the participants provides other researchers the opportunity to generalize the findings and apply to other areas of research (see Shenton, 2004).

**Dependability**

In qualitative research, dependability of the study refers to the stability of the data which is consistent and stable (see Ravitch & Carl, 2016). To establish dependability, I provided an in-depth description of the processes used throughout my research study (see Merriam & Tisdale, 2016). I addressed the dependability of my study by providing a clearly defined picture for future audiences and researchers to conduct a similar study to potentially obtain comparable results (see Shenton, 2004). I also addressed the dependability of the study through participants' interviews and member checking processes. Future researchers could use the research design, data collection and analysis

methods, and reflective processes to replicate my work in the future with the realization for the study to potentially yield different results.

## Confirmability

Confirmability establishes that the researcher sought to have confirmable data and the study was free from bias and prejudice (see Patton, 2015). I addressed confirmability, or objectivity, by establishing neutrality and reasonable freedom from biases (see Ravitch & Carl, 2016). I established confirmability through providing transparent explanations throughout the study related to my research topic, any personal or professional biases, outlining the data collection and analysis processes, through member checking, and reflective journaling. The member checking emails, correspondence, and interviews helped me to clarify main concepts received from each participant's interview. The member checking emails asked each participant to review overall findings. The email correspondence sent to each participant allowed all participants the opportunity to confirm the overall study findings. Of the nine participants, five participants returned email responses with additional feedback as outlined in Table 4.

**Table 4**

*Participants Who Returned Member Check Document and Provided Additional Comment*

| | Main study | Sent member-checking document | Returned with substantive annotation | Returned with minimal annotation | Returned no annotation | Did not return |
|---|---|---|---|---|---|---|
| Number of participants | 9 | 9 | 1 | 4 | 0 | 4 |
| Participants | P1–P9 | P1–P9 | P9 | P2, P5, P7, P8 | NA | P1, P3, P4, P6 |

In addition to sending emails to all participants, I also engaged in member checking interviews via Zoom with a subset of the participants. I reviewed the overall findings of the study and overwhelmingly, the participants were interested in the information shared, content with the member checking process, and confirmed the findings. One participant noted through member checking that, “It felt therapeutic to answer your questions… I really did need to debrief from the past year and a half.” Another participant met with me via Zoom for a brief discussion regarding a few minor corrections to ensure the original responses were clear and concise and to share, “If you need me for anything else, just let me know.” Through member checking, the subset of participants shared remarks including, “This interview experience was insightful for me,” and “I think you captured the essence of our interview,” along with providing examples of technology discussed during the initial interview by means of a follow-up email. One participant sent substantive annotations in email correspondence stating, “There were a few things that I do not remember exactly what I said,” and provided additional statements that offered further clarification. The annotations provided by participants were minor and did not take away from the essence of the initial findings.

The reflective journaling allowed me to separate my thoughts from the participants. The journaling process afforded me the assurance that my study was free from personal biases. Additionally, I took the necessary steps to ensure the study’s findings are purely the result of the participants’ perceptions, experiences, and ideas, rather than any opinions or preferences of me as the researcher (see Shenton, 2004).

## Results by Research Questions

In this section, I present the findings of the study aligned with the research questions. The interview questions were structured to engage participants in conversations that would produce data to provide insights and acquire understanding about the two research questions presented in the study:

- RQ1: What are K–12 teachers' perceptions and experiences of the PD provided by their school districts to support the use of instructional technology?
- RQ2: How do K–12 teachers put into practice their learning from PD to support the use of instructional technology?

A total of eight themes emerged from the data analysis and aligned with the two research questions.

### Research Question 1

RQ1 asked: What are K–12 teachers' perceptions and experiences of the PD provided by their school districts to support the use of instructional technology? Based on the research question, four themes emerged. I organize this section based upon the four identified themes:

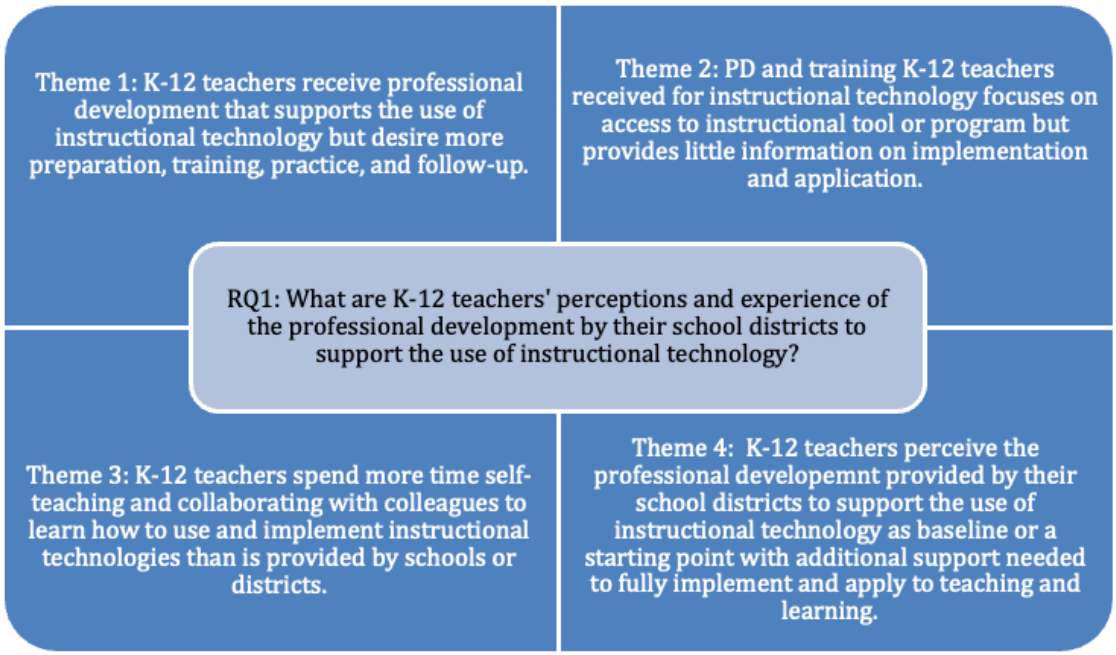
- K–12 teachers receive PD that supports the use of instructional technology but desire more preparation, training, practice, and follow-up.
- PD and training K–12 teachers received for instructional technology focuses on access to instructional tool or program but provides little information on implementation and application.

- K–12 teachers spend more time self-teaching and collaborating with colleagues to learn how to use and implement instructional technologies than is provided by schools or districts.
- K–12 teachers perceive the PD provided by their school district to support the use of instructional technology as baseline or a starting point with additional support needed to fully implement and apply to teaching and learning.

To answer RQ1, I asked participants to discuss their PD experiences and perceptions provided by their school to support the use of technology. The participants' responded to the interview questions that framed RQ1, and I identified four themes based upon the perceptions and experiences of K–12 teachers regarding PD provided by their school districts to support the use of instructional technology (see Figure 1). Figure 1 shows RQ1 and the four related themes.

**Figure 1**

*Themes Related to RQ1*




### *Theme 1: K–12 Teachers Receive Professional Development That Supports the use of Instructional Technology but Desire More Preparation, Training, Practice, and Follow Up*

This theme established a basis for understanding the varied perceptions and experiences of K–12 teachers who received PD that supported the use of instructional technology. Concerning the first research question, all participants confirmed participation in PD that supported the use of instructional technology. Participants participated in PD including whole group, small group, breakout sessions, guest speakers, early release days or webinars to support instructional technologies. Participant 1 stated, “Before COVID came, our school corporation already had basic plans put in place… It

was more of review and reinforced skills." Similarly, Participant 2 stated, "We've had a lot of in-service training." Whereas Participant 3 mentioned that PD support included "mainly trainings" but did not align with staff training needs.

The participants experienced varied levels of PD, from very effective PD to weak or ineffective PD, to support instructional technologies. Of the participants who received PD from their school district, a pattern emerged related to the PD sessions and support levels. Seven participants reported receiving multiple PD sessions, whereas two participants reported receiving minimal PD support by their school district. In most instances, participants expressed gratitude toward the school district for providing PD as a means to prepare and train teachers for the use of instructional technologies. Participant 5 stated, "We've had awesome support" in the area of PD with "tailored" supports "not only to your grade level but your subject area." Whereas Participants 6 recalled "minimal" PD offered and much of the time had to "create our own PD."

Many of the participants believed they received quality PD support from their schools or districts and a few participants believed the support could be better or lacked necessary information to support the implementation or application of instructional technologies. A group of participants expressed a desire for higher levels of PD preparation and training, time to practice, and intentional follow up to continue to build capacity and support teachers as they work to learn and implement instructional technology. Five participants noted that the PD support "worked well" and "we are super lucky" by the level of support provided. Whereas four participants indicated that the PD

support “could be better,” the PD was “lacking” or “lacking step-by-step instruction, application, and follow up” and “they cram a lot of information in a short training.”

Each participant discussed and described the PD support provided by their school district. Participant 1 stated, “I feel like the school is doing a lot, and it’s encouraging.” Participant 2 shared, “We had a lot of in-service training” including PD topics such as eLearning, learning management systems, and instructional technologies. Whereas Participant 6 noted “minimal” PD support offered in a previous district rather than a continuum of PD supports in the current district. Altogether, the participants received PD supports provided by their school districts with variances in quality from highly effective to weak.

All participants received face-to-face PD prior to COVID. After the onset of COVID-19, participants experienced a shift in PD formats moving from F2F to digital platforms conducted online, either through Zoom, Google Meets, video recordings, or hybrid approaches that aligned with social distancing guidelines. There were some commonalities reported by all participants, such as online PD sessions. Each participant received PD training sessions through a virtual platform. However, there were notable differences in the types and amount of PD offerings. Four participants reported participation in mandatory online PD sessions via Zoom related to specific PD content; two participants recalled participation in online PD sessions specific to grade level or subject area content, and two participants participated in online self-paced PD sessions. A pattern emerged from the data in regard to the varied level of PD supports provided by

participant's school districts. One of the participants reported "a lot has been done for us," whereas other participants recalled "minimal" PD offerings.

Participants provided individual insights on the PD sessions and varied experiences. For example, Participant 2 participated in "several" PD sessions related to instructional technology throughout 25 years of teaching and praised the school district by stating, "I think we do a pretty decent job here finding those tools, and they do a good job of sharing them with us." Participant 2 received a lot of in-service training related to eLearning, how to sessions, and different PD options, including multiple sessions focused on different technology tools. When discussed further, Participant 2 described the intent, perception, and need of the multiple sessions: "I probably couldn't tell you all the different tools that I've been shown, because we do them in a professional development… I learned maybe 10 different things in one day, PD, different courses, different sessions..."

Similarly, Participants 4 and 5 received PD to support instructional technologies, build capacity, and collaborate within PLCs. Participant 5 shared that the district provided support through PD by grade level, subject area, or through periodic outside speakers or training and commented: "The majority of the PD is through early release time for PDs and PLCs through grade level work time… a majority of PLC include time to work with each other and meetings with other grade levels across the district."

Participant 4 took part in weekly early release days scheduled by the school district to focus on PD and time to meet with professional learning communities. The focus of the PD sessions included specified trainings or an occasional outside speaker

along with time to work with grade level colleagues. Participant 4 noted that the PD sessions related to instructional technology "gave me a good jumpstart."

Likewise, Participant 8 received outstanding PD support from the district team that provided explanations, instructions, and clear directions. The participant stated "Our [administrative] team, they are out of this world." The participant recalled mandatory PD sessions, which were also recorded and distributed with supporting documents or "cheat sheets," and open office hours. The participant expressed appreciation for the district support and office hours provided recalling, "If we had questions or needed additional assistance, we could talk to them at any time." Participant 8 provided praise for the district PD support by stating:

> The PD support team… are out of this world. I was not real computer savvy at the time, and I have to say with assistance online is a lot easier. They offered a lot of a couple of mandatory… like Zoom. They were very helpful. Follow-up assistance and instructional needs were addressed through troubleshooting and additional support. Due to COVID, much of the instructional technology training and support was delivered via Zoom and infographic cheat sheets.

In contrast, a pattern emerged from the data from the participants who discussed the lack in preparation and training, insufficient time to practice, and little to no follow-up related to the PD received to support instructional technology. The contrasting views indicated the need for more PD with a concentration of the higher levels of training, time to practice, and follow-up to support ongoing, job-embedded implementation of instructional technologies. Participants were appreciative of their school districts,

however, expressed the need to move beyond baseline PD into higher levels of preparation, training, and follow-up support to teachers.

Participant 4 took part in weekly early release days scheduled by the school district to focus on PD and time to meet with professional learning communities. Whereas the PD sessions focused on specific trainings or included a guest speaker, Participant 4 noted that the PD session as "baseline" with additional research required to move beyond the baseline. The participant also shared that the PD support could be better and aligned with what is realistic for teaching and learning:

> It could be better because I feel like sometimes, they cram a lot of information, like a four hour training into an hour and a half. A lot of information, but not able to necessarily digest it all and implement it all at one time. I feel like we'll get something thrown at us… like technology and going one to one. Some days it's very frustrating because that's just not realistic… what they think is realistic on their level was not realistic on our level.

Participant 5 shared concerns about PD and the need for additional preparation, time, and follow-up by stating, "A lot is provided, but not enough time and doing tech because it's tech does not mean it presents the best way to instruct or for students to apply learning." Participant 5 went on further to share that the district provided support through PD by grade level, subject area, or through periodic outside speakers or training and commented:

> The majority of the PD is through early release time for PDs and PLCs through grade level work time… a majority of PLC include time to work with each other

> and meetings with other grade levels across the district. Advanced scheduling not provided unless an outside speaker with advance notice of 1 to 2 weeks.

When asked about the PD provided by the school district to support instructional technology, Participant 6 recalled minimal support and that teachers had to create their own PD. Participant 6 discussed further the collaborative processes involving research to "find out how we do it and then we taught each other." The participant explained the collaborative processes involved taking the information obtained from the PD offered for the new program, spending time with colleagues to discuss, research, and learn the program to build a working knowledge to use it for teaching and learning. The participant noted the additional collaboration, research, and implementation practice was apart from the district level training. When prompted to talk more about the PD support provided by the school district, Participant 6 stated:

> In the midst of starting a new program, which was a hybrid situation… that was the only professional development we had was a continuation of the program… we collaborated a lot, and we became autonomous when it came to having to figure out the need… research to find out how we do it, and then we taught each other… It was a learning curve for me.

With slightly different points of view than Participant 6 who received baseline programmatic PD from their school district, Participants 7, 8, and 9 were recipients of varied levels of PD support provided by their school districts and noted the PD was directly related to predetermined themes or topics. The participants expressed the desire to receive additional PD directly related to classroom instruction, hands-on

implementation, and intentional follow-up feedback tied to integration of instructional technologies. Participant 7 discussed attending district PD sessions focused on specified topics delivered in a whole group setting. The participant preferred "in person or getting feedback" after PD participation aligned with "what I can do" in the classroom to accelerate teaching and learning. Furthermore, Participant 7 expressed the desire for a higher level of hands-on PD including direct instruction related to classroom relevance and feedback:

> I wish it [PD] were a little more hands-on like working with the team. I wish it were a school wide whole day kind of thing. I definitely prefer in person or getting feedback after professional development, focused on what can I do, like in my classroom to really make it stand out.

Likewise, Participant 9 highlighted that PD sessions were primarily for beginners to Google Classroom or advanced trainings for specific programs. PD sessions were provided by the school districts for participants either online or in-person prior to the COVID-19 pandemic. During COVID-19, PD sessions were organized for participants by team support and online. The participant noted a lack of direction as the district PD did not "really direct anyone into any particular learning path." Participant 9 deemed the lack of direction as "the most difficult thing" and compared to "drinking from a water firehose" because of the unknown, as in "what you didn't know what you needed to know." Participant 9 stated:

> As a whole I think they do a great job offering the trainings in different formats for teachers. They are always willing to accept questions after the fact, then the one-on-one support they provide from the representatives helped out a lot too.

Participants received PD from their schools or districts, yet experienced varied levels of PD, from effective to weak, to support instructional technologies. Many of the participants expressed a desire for more preparation, training, practice, and follow up from district supports related to instructional technologies. Most participants desired PD focused on what is realistic for modern classroom instruction using instructional technologies to teach whether in-person, digital, or online.

### *Theme 2: PD and Training K–12 Teachers Received for Instructional Technology Focuses on Access to Instructional Tool or Program But Provides Little Information on Implementation and Application*

This theme directly addressed RQ1, that inquired about K–12 teachers' perceptions of the PD provided by their school districts to support the use of instructional technology. When asked about the PD provided by the school district, many of the teachers said that the PD focused more on access to an instructional tool or program and lacked information or direct instruction to fully implement or apply such tools or programs. There was a pattern that emerged and in almost all cases, participants expressed approvals for district PD including "a lot of in-service training," "awesome support," and "supported by the district."

Participants 1 and 5 expressed approvals for district level PD and described the nature of the district level PD provided. Participant 1 stated:

> I feel like a lot has been done for us. We have been taught and go for trainings. We are doing online meetings via Zoom…even with the transition from traditional to the online platform, not every day is very conversant, and most [teachers] are resistant to change. I feel like it [PD] has enabled people to change… I feel like the school is doing a lot and it's encouraging.

Participant 5 received "awesome support" which was "tailored" based on the grade level or subject area. When probed for additional information about the district level support provided before and during COVID, Participant 5 shared:

> There are more opportunities to take advantage of… anything you need… the person in charge of the PD for our technology will customize something for you… During the COVID experience, it was constant communication… recorded videos, like step by step, guiding us through anything that was needed. the professional development has kind of not been as strong, because of COVID reasons. The support is still there if we need anything, then you just ask.

In contrast, another pattern emerged as some participants expressed dissatisfaction with the lack of information obtained during PD. A few participants highlighted the need for more information or direct instruction to implement and apply specific tools or programs in the classroom. Participants 2, 3, and 6 provided insights related training received to access a new program or instructional tool, feedback, implementation, and application.

Participant 2 expressed approval of the PD provided by the district, yet discussed the need to build capacity and move beyond basic instruction to apply and implement the PD:

> I think we do a pretty decent job here of finding those tools and they do a good job of sharing them with us. I probably couldn't tell you all the different tools that I've been shown because we do them in a professional development. However, I learned maybe 10 different things in a 1-day professional development, different course, different sessions, and then I would need time to be able to use all of them to get them reinforced… The corporation provided basic instruction, but it wasn't as useful as implementing.

Likewise, Participant 3 discussed the district trainings and expressed a desire for district administrators to gather feedback from teachers on what is being implemented in the classroom. Participant 3 shared frustration with the district PD and failure to seek teacher input on what should be implemented based on teachers' suggestions by stating: "Come see what we're doing. Get feedback from teachers. Listen without judgment."

Similarly, Participant 6 mentioned that the school district provided PD sessions focused on a new instructional program with limited implementation or application guidance with no additional PD:

> The district I entered had just started a new program… that was the only professional development we had as a continuation of this modern classroom program. It was flexible enough for us to learn how to use some of the

> platforms… all of those different resources …we had to create our own units for our own classroom. That was the extent to professional development.

The second theme addressed RQ1 with an inquiry about the teachers' perceptions of the PD provided by their school districts to support the use of instructional technology. Many of the teachers shared perspectives and experiences related to the PD sessions that were focused on accessing an instructional tool or computer program. Several participants expressed approval as well as concerns with the PD sessions which lacked direct instruction and the necessary information to fully implement or apply the instructional programs or tools. The participants offered contrasting views based upon the varied levels of PD and individual experiences.

### *Theme 3: K–12 Teachers Spend More Time Self-Teaching and Collaborating With Colleagues to Learn How To Use and Implement Instructional Technologies Than is Provided by Schools or Districts*

All participants shared that their school districts provided PD sessions to support instructional technology and a pattern emerged showing that many of the participants found themselves spending more time to self-teach and collaborate with their colleagues to learn an instructional app, program, or strategy than was provided by the school or district. Each participant had experiences teaching in a traditional classroom setting as well as teaching online. Overwhelmingly, the participants reflected frustrations and challenges related to the PD, teaching in-person and virtually during COVID, saying "how well it [instructional technology] works with kids," "how to simplify ways of making it easy," and learning "more how to blend it." In contrast, there were variations in

the perceptions of teachers including diverse levels of frustration, the time spent self-teaching, and collaborating with colleagues to learn how to use and implement instructional technologies or address challenges. When asked about the challenges, Participant 1 stated:

> The first time, it was a bit of a challenge because that training there will be so many questions asked… there's also some negative energy from some of our teachers. It's quite a challenge at times. Trainings prior to COVID were offered face to face. Now it was quite limited. Now, it was only mostly online. It was very interactive, and mostly the questions were answered or attempts to answer. There were webinars… you learn from being all through them…afterwards you're allowed to ask some questions and then receive answers.

Likewise, Participant 6 shared perceptions and experiences related to challenges, self-teaching, accessing YouTube, and collaborating with colleagues to build understanding of instructional technologies, stating:

> I found myself watching a lot of YouTube and self-teaching. That alone made me realize how much YouTube is concise, I mean, I never realized that it was a social media platform in the way that it is participatory… we are able to give each other some feedback and I never used YouTube in that way, but us, my colleagues and I have been able to research and find YouTube videos and share them with each other, and then actually be able to talk to other people around the world that are doing that same video.

With a different point of view, Participant 7 offered additional insights related to district PD and shared the desire for more hands-on PD for training and development:

> Workshops here in person were for self-care, curriculum mapping, or whatever. I wish it were a little more hands-on like working with the team. I also wish that it were a school-wide, whole-day, kind of thing. I watch conferences and workshops online… I definitely prefer the in person or getting feedback after professional development, focused on what can I do, like in my classroom to really make it stand out.

With a slightly different perspective, Participant 9 shared experiences with self-teaching, independent learning, and the related frustrations. Participant 9 also expressed the perceived intentions of the school district aligned with PD:

> I think that they do… have the best intentions to do all of this… independent learning. And, you know, get all these fancy badges to put in my email signature and all this stuff. The time, I don't like it. I need structure. And just like the kids do, I do too… They have the session, record the session, leave them up on the website for you to access afterwards. And I do think it helps.

The third theme addressed RQ1 with an inquiry about the teachers' perceptions and PD experiences provided by their school districts to support the use of instructional technology. Several participants said they spent time self-teaching and collaborating with colleagues to learn an app, program, or instructional strategy to use for teaching and learning. Many participants expressed appreciation for the PD provided by the school or district along with various levels of frustration related to the amount of independent

learning necessary to build capacity and meet the demands that come along with teaching and learning related to using instructional technologies.

### *Theme 4: K–12 Teachers Perceive the Professional Development Provided by Their School Districts to Support the Use of Instructional Technology as Baseline or a Starting Point With Additional Support Needed to Fully Implement and Apply to Teaching and Learning*

This theme addressed teachers' perceptions of the PD provided by their school districts to support the use of instructional technology. When asked about the PD, many of the participants recalled that the district-level training was focused on baseline information about instructional technology including programmatic changes, computer programs, basic instructions, or presentations. A pattern emerged where several participants perceived the PD provided by their school districts to support the use of instructional technology as "baseline" or "a starting point" with additional supports needed to fully understand, simplify, implement, and apply to teaching and learning. A few participants distinctly expressed the need to "simplify," "find balance," and provide "grade level" training and "follow-up supports" related to instruction and instructional technologies.

Participant 1 said that instructional technology must be simplified for teachers with follow-up supports provided:

> I feel like it's going to be more simplified like for example, data, you'll find that some students may not even be fine with the technology, because you know students are also very different. Every student is very different. And I cannot feel

> like if we were introduced to a platform whereby we can do some tutoring, that is offered classes that enable immediate feedback, like for this Zoom, which can be incorporated in a class setup in a more simplified way for easy feedback and to ensure you are reaching every student… Something like that is not limited… And also, I feel like it will enhance skill-based training… and help them to focus on new things, also not stagnate.

The desire to move beyond baseline or introductory levels of PD that showcase how the instructional technology works with students was expressed by Participants 2 and 7. Participant 2 stated:

> I would like to find something that can show me how well it works with kids, if they can say that you know this works…about as well as the classroom or better than the classroom, or better than in person in the classroom, that's what would get me to buy into more of these little things. For example, Quizlet. I started seeing Quizlet live with these kids who are so competitive that they want to jump in, and they want to win… things they never would have memorized. Now that we have COVID, I can't do that as easily because they can't get around in groups. It took me awhile to buy into that, because I did not see it firsthand, or I was not told that you know this really helps for this situation.

Similarly, Participant 7 expressed the need to see PD topics implemented in a classroom to gain firsthand knowledge if the PD works well with teaching and learning:

> I would like to see a teacher implement it into your classroom. So, for example, one teacher is really good with Flipgrid, it would be great if I could get my class

> covered for the 20 minutes that she's doing that to see how she's doing it and how she put it on. What is she doing afterward to assess? So, I guess just seeing it in person and like in a real class would probably help, instead of just like here's why you should do and let us know if you have any questions. That would be nice… to see that person and like with real kids in a real teacher in a real classroom.

With a slightly differing perspective, Participant 4 revealed an interest in finding a balance with instruction and instructional technologies:

> I would like to learn more how to blend it because I feel like we got really heavy on technology. And we've seen a decline in our students as far as what they're capable of doing, paper and pencil, and they can't seem to function. They rely on their technology… We've gone completely the other way. I'd like to know how to find that balance of, to get them to enjoy it… and still see it work in a classroom with either one or the other.

Likewise, Participant 5 conveyed a desire "to do things better" and stated:

> I've always got a question on how to do things better. I'm always one that I have an idea that I don't have the technology piece. So honestly, I would just like somebody to sit next to me and watch me do what I do and say, Oh, I know what you could use, you could use this… I would love for somebody to sit down with me, listen, let me talk out loud as I'm planning lessons and say you could us this, this would be great.

When probed for additional information on how the PD trainings filled this need, Participant 4 stated:

> Not greatly… what is working on their [admin] level of their mind is not always working in our level. And so sometimes we'll get training, or they'll have an idea of you need to this or that… We get a lot of our training and what's most beneficial, I think, is when we get trained from almost all our own colleagues from each other.

Similarly, Participant 7 noted that PD sessions were schoolwide and "kind of stinks" because the trainings were not school or grade level specific. Participant 7 shared:

> Those things in high school may not apply to things in the elementary school… This year because it was 2020, we didn't meet during those two hour periods, it was kind of like teach what you can, and we'll cover it later on. So, PD this year was kind of disappointing.

The theme addressed RQ1, and teachers' perceptions of the PD provided by their school districts to support the use of instructional technology. Many of the participants indicated that district training focused on baseline information related to instructional technologies including programmatic changes, computer programs, basic instructions, or presentations. The participants shared diverse viewpoints related to their individual PD experiences and district supports that provided baseline or starting points and deemed additional supports as necessary to understand, implement, and apply instructional technologies in teaching and learning.

**Research Question 2**

RQ2 asked: How do K–12 teachers put into practice their learning from PD to support the use of instructional technology? Based on the research question, four themes emerged. I organize this section based upon the identified themes:

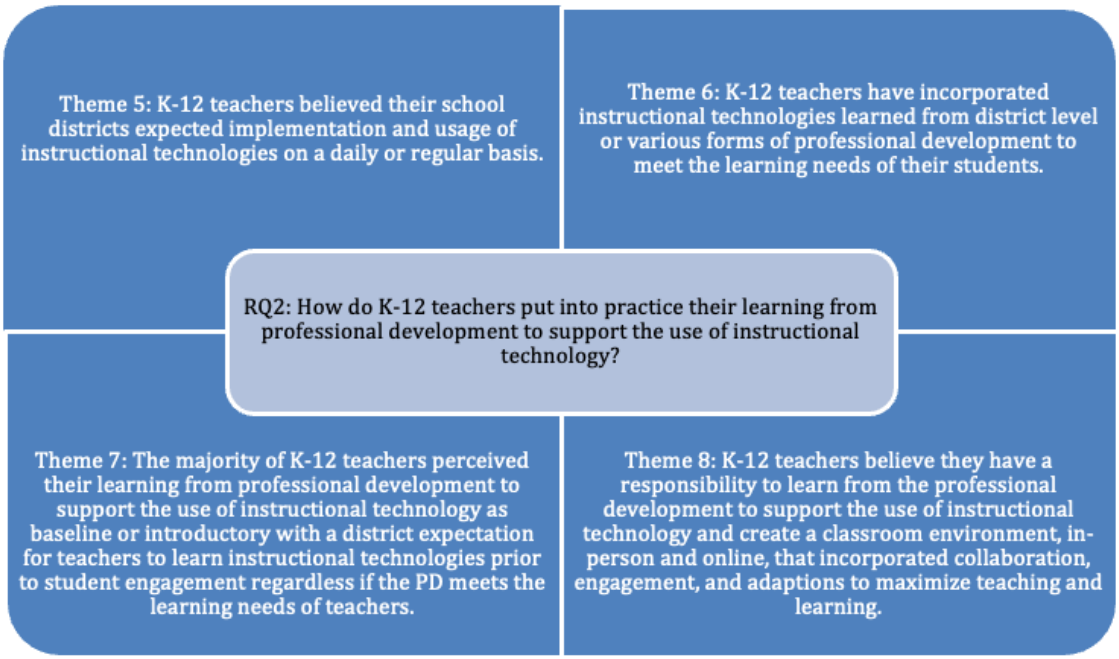
- K–12 teachers believed their school district expected implementation and usage of instructional technologies on a daily or regular basis.
- K–12 teachers have incorporated instructional technologies learned from district level or various forms of PD to meet the learning needs of their students.
- The majority of K–12 teachers perceived their learning from PD to support the use of instructional technology as baseline or introductory with a district expectation for teachers to learn instructional technologies prior to student engagement regardless of if the PD meets the learning needs of teachers.
- K–12 teachers believe they have a responsibility to learn from the PD to support the use of instructional technologies and create a classroom environment, in-person and online, that incorporated collaboration, engagement, and adaptations to maximize teaching and learning.

To answer RQ2, I asked participants how they put into practice their learning from PD to support the use of instructional technology. Participants' responses reflected their perceptions and experiences of district implementation and individualized responsibilities related to the research topic. The results with respect to RQ2 showed that all participants had various perceptions and experiences on how they put into practice

their learning from PD session that supported the use of instructional technologies (see Figure 2). Figure 2 shows the relationship between RQ2 and the four emergent themes

**Figure 2**

*Themes Related to RQ2*




### *Theme 5: K–12 Teachers Believed Their School Districts Expected Implementation and Usage of Instructional Technologies on a Daily or Regular Basis*

K–12 teachers believed their school districts expected implementation and usage of instructional technologies on a daily or regular basis. This theme explored how K–12 teachers put into practice their learning from PD to support the use of instructional technology. When asked about the learning from PD to support the use of instructional technology, participants expressed that they believed their school districts expected them to implement and use instructional technology on a daily basis or regularly. Participants'

descriptions included what they perceived or were told by administration was the district expectation to use instructional technology. A pattern emerged from the data related to variations of stated district expectations versus implied, unstated, or encouraged district expectations. Participants 1, 4, and 5 discussed the district expectations and they understood them to be stated. Participant 1 shared that the district expected teachers to use instructional technology and for better results by stating:

> I think that the district was supposed to, like, expect that as to give better results. And through this, it's by coming up with simpler models in classes, and encourage an interactive environment, teamwork, and also give immediate feedback for students. Be very like informative for them. They expect us to give similar models, give lots of communication, address challenges when there are challenges.

Similarly, Participant 4 discussed the believed district-wide expectations to use instructional technologies aligned with subscriptions to different programs. Participant 6 expressed the district expectations to "start with a baseline" and build capacity of daily usage, stating:

> They expect us to use it every day. At some capacity in our classrooms, they have bought subscriptions to different programs… There's an expectation to be using and implementing those into our classroom instruction. It doesn't have to be all day, and they told us as a district they don't want kids on them all day, but they want them on, and using those.

Likewise, Participant 5 discussed the time and money invested into instructional technology, PD, and support. Participant 6 shared that the district expected teachers to use instructional technologies and that administrators expect to see teachers using a variety of sources aligned with what the district invested time and money into for instructional technology:

> They've spent so much time and money investing into instructional technology. So, it's obvious it's important to own and expect you to use it. There's nothing I don't think as far as our policies that say, you have to use X amount that I know. When an administrator walks into your room, they want to see [teachers] using a variety of resources. We are one to one, so every student has a Chromebook at our grade level and our building. They want to see them interacting, not only with each other but with the technology as well.

With a slightly different perspective, Participant 2 shared that the district expects teachers to learn instructional technologies before implementing with students. Furthermore, Participant 2 remarked that the district provided PD related to instructional technology for more than 5 years and most recently focused on learning management systems and cloud based instructional access, stating:

> Other than Canvas…we all have to have the same. They did that 5 years ago when we first got webpages, everybody had to have a web page that at least included an email address. As we've gone through this year, we all have to use Canvas, Google Classroom, and Google Meets. The expectation of us using it is just that

> we use what we need to try to make sure kids are familiar with it before we require them to use it.

Similarly, Participant 3 indicated that the district promoted and required teachers to follow district-wide expectations for teaching and learning with student access to engaging and collaborative interactions, stating:

> My class platform that is collaborative in terms of very active, for both students and also gathering feedback from what the students have learned how they understand and get into my assessments, and ensuring that these active and social learning among the students so that they feel like they are growing, and they are growing together. No one wants to be left behind. You are the teacher and you're supposed to let the struggle… I feel like after COVID, the school district requires you to learn just like before COVID. The time that has been taken for professional development is very small… It's encouraged that everyone looks at it positively because technology is the way to go, and it is easier if you accept it right now so that you can learn more.

Whereas Participant 6 shared that implementation of instructional technology along with reporting are of importance and supported by the school district. When probed to discuss further, Participant 6 voiced what was believed or conceived as a district expectation for implementing instructional technologies:

> Oh, I think, not that anything's ever been written or told, I think that they want us to implement the technology that they have provided for us in or on a daily basis. And in reporting as well, reporting was a little bit different this year as far as state

> reporting. We didn't have state testing this year… I think they expect us to use it with fidelity. And I'm speaking actually to what they provided with the modern classroom because that was something that they really pushed.

Several participants expressed that they believed their schools and districts expected implementation of instructional technologies based upon a few factors including equipment received, PD trainings, and the amount of funds spend on both. Participants 9 and 7 discussed the factors with specific details related to their respective schools and districts. Participant 9 shared the district expectations of using instructional technology and equipment for teaching, learning, and reporting. Participant 9 believed that the district expected teachers to use instructional technology based upon the PD and equipment received:

> There is an expectation that we're going to use it. We all get computers. We're equipped with projectors in our classrooms and document cameras. The curriculum is usually like tech enhanced…It's expected that we are incorporating instructional like incorporating technology into our instruction on a regular basis, and with testing. We're expected to prepare students to use the testing platforms because they have certain technology enhancements that we don't even have in the regular curriculum resources.

With a slightly differing perspective, Participant 7 shared district expectations to implement instructional technology, paid apps, or specific PD training. Participant 7 expressed that district expectations to use the instructional technologies should be specifically for small group instruction:

> They expect us to use it during small group. We are paying for these apps or we're doing a specific professional development. They don't want kids on iPads 24/7, obviously. But they do want us to use for an assignment or for free time. I specifically use mine just for small group.

Conversely, Participant shared district expectations before and during COVID, by stating:

> We're expected obviously to use this to conduct meetings, it was for the longest time before we did go hybrid. It was the only way for us to teach, so obviously we were expected to do that. One thing we were told was that we have all these great programs and you're learning about them, but only pick like two or three, and make them really shine… We were expected to make overview videos and streamline to students.

The theme addressed RQ2 and how K–12 teachers put into practice their learning from PD to support the use of instructional technology. Most participants believed their school district expected implementation and usage of instructional technologies. Many participants agreed that the expected implementation of instructional technologies should be used regularly or on a daily basis. Although teaching in different locations and districts across the nation, the participants indicated that their districts provided technology devices for teaching and learning whether in-person, hybrid, or a virtual platform.

### *Theme 6: K–12 Teachers Have Incorporated Instructional Technologies Learned From District Level or Various Forms of Professional Development to Meet the Learning Needs of Their Students*

K–12 teachers have incorporated learning from PD training sessions to support the use of instructional technology. Theme 6 addressed and how K–12 teachers put into practice their learning from PD to support the use of instructional technology. When asked, the K–12 participants believed they have incorporated instructional technologies learned from district level or various forms of PD to meet the learning needs of their students. The most common responses referred to teachers who know and understand their students' learning needs because they work with them on a daily basis, observe which instructional strategies, apps, or programs students accept or reject, and advocated using instructional technology to engage students in the learning processes. All participants experienced success as they used technology for instruction. Although all participants experienced successes, there were slight variations in the successes experienced.

Participant 1 discussed successes experienced when using technology for instruction including higher levels of engagement and feedback from the students by stating:

> More feedback from the class. A class is not as boring as the traditional, and you feel more fulfilled. You feel like you're doing the right thing that you're treating them with the skills that will help them even in the future… it will improve their performance. Other successes… could enhance class setup and also outside the

> classroom, like something that involves type of exercise outside of class that will be enhanced by the ease and use of technology.

With a slightly differing experience, Participant 2 said that cloud-based computing worked well especially related to Google Meet and conducting real-time meetings with students. Participant 2 experienced successes using a variety of instructional technologies and stated:

> I think my Google Meets work well… I used different technologies to talk about, such as a whiteboard. I put recordings on Canvas, and I put my whiteboard on Canvas, and they can go back and look at notes… So, that means people in class or online were getting the same instructions as those on Google Meets.

With a similar response, Participant 3 experienced success with adaptive learning through instructional technologies by stating:

> The successes included more adaptive learning…working with more tools and collaboration. People are working, many groups come together, feedback, any time, and it is much easier. And the information is generally accessible almost every time when students need something.

Several participants discussed a trend noticed in education and with students. A pattern emerged where teachers described students as digital natives or technology-savvy. Additionally, teachers voiced that they believed there are differing views of how students learn versus how teachers use technology for instruction. Teachers noted that students who are being raised in a technology driven society or have been around technology all their lives are assumed to just know how to do everything, but the reality is that they do

not, and students need to be taught the basics of instructional technology, along with how to use technology for academics. Teachers discussed successes related to teaching students about instructional technologies, build up specific technology skills, and develop academic skill sets to increase performance.

Participant 4 said that students have been raised with technology, identified as digital natives who are around technology all of their lives, and experienced increase performance levels:

> I think we've done well with [students]. The come in and you think they would know because they've been around technology all their lives that they would just know how to do everything. Okay, they don't and now they're getting so much more user friendly, and they can do so much more… I have loved using the technology with reading, as far as the listening and reading… they actually record themselves reading. To see them grow and actually be able to hear and sent that to parents to know how they're growing or look how they're doing.

With a differing experience and observation, Participant 5 noticed a difference in student versus school district approaches to instructional technology:

> One of the things that I've noticed since we have gone one to one. I remember when kids first got their Chromebooks, and it was a gaming system. I remember having a lot of conversations with kids, and I still do occasionally… they still have a tendency to wander and jump on YouTube, but I've seen less of that, and I'm seeing more consistency to more familiarity when I talk about opening up a Google Doc or opening up a Google Sheet or slideshow or even getting on

> Canvas or getting on Classroom. I see as each year, it's a little easier to teach… I remember the very beginning, they can't. I thought these kids are all supposed to be really good at technology, and they were awful. So, I'm seeing improvement in that area.

Similarly, Participant 6 focused on navigating different platforms and different tools aligned with individual success and student engagement by stating:

> Oh, it's self-serving. I guess I'm learning more about navigating different platforms and different tools. I'm actually excited about some of the things that I learned this past year that I want to perfect. I'm anxious to practice more… This actually follows into the modern classroom philosophy where students are engaging more.

Whereas Participant 7 shared successes using double reinforcement through prerecorded lessons, Canvas, and instructional technology:

> The one good thing out of COVID is that when we would do the prerecorded lessons, I would do that for my online kids, but I would also use this prerecorded lessons and upload for my math lessons. I would upload it to the regular Canvas page, and they [students] knew how to do that. So, I would have one center at my back table, and I would have one [center] watching my video. It's like a double reinforcer of the standard I'm supposed to be teaching.

With a slightly variation in perspective related to successes experienced using technology for instruction, Participant 8 focused on confidence as the largest success with using technology for instruction:

> I think the largest success is with confidence. Just getting confidence in it… to have that confidence to be able to help the parents and try new things and to see all these cool things and then the kids… they would do their videos and they'd be so excited to watch it. Being able to have that confidence to get us all through it… and be able to do that was amazing.

Similarly, Participant 9 mentioned an appreciation of higher levels of data-informed decisions as an area of success with using instructional technology for teaching and learning:

> I really like CK–12 [program] because it give me more information on an individual basis. I can see how long students spent working on this. I can see what level of questions they're answering and if this student is mastering the topic. I can look at the class session and see where students fall compared to other ones because they have adaptive practice question base… I have flexibility in assigning different modes of content…they're all tech book instead of actual hands-on tech or text app. The majority of the technology is infused in the curriculum.

The theme addressed how K–12 teachers put into practice their learning from PD to support the use of instructional technology. Many participants incorporated instructional technologies they learned from district level or other forms of PD to meet student learning needs. Most participants expressed an understanding of their students' learning needs based on student levels of engagement and observing when students accept or reject a particular instructional technology strategy, app, or program. All participants experienced a level of success as they used technology for instruction.

### *Theme 7: The Majority of K–12 Teachers Perceived Their Learning From Professional Development to Support the use of Instructional Technology as Baseline or Introductory With a District Expectation for Teachers to Learn Instructional Technologies Prior to Student Engagement Regardless of if the PD Meets the Learning Needs of Teachers*

The majority of K–12 teachers perceived their learning from PD to support the use of instructional technology as baseline or introductory with a district expectation for teachers to learn instructional technologies prior to student engagement regardless of if the PD meets the learning needs of teachers. Theme 7 addressed how K–12 teachers put into practice their learning from PD to support the use of instructional technology. A pattern emerged and many participants remarked that additional support is needed from the school district to aid the use of instructional technology to support all stakeholders including teachers, students, and families. Several participants discussed the additional supports needed to aid the use of instructional technologies. Participant 1 highlighted the need for forums, digital products, and other offerings to make progress with instructional technology for teaching and learning:

> More forms on that [instructional technology], more digital products to be offered, advantages of this platform should be given from time to time to people so that they feel like they like their progress because if you don't motivate them, then it won't work.

Likewise, Participant 2 discussed the need to feel comfortable with instructional technology especially related to a newer technology integrated app or program.

Additionally, Participant 2 mentioned the need to incorporate planning focused on "time to use it," the instructional technology, as current PD is provided at an introductory level. Participant 2 stated:

> I would say planning time to use it [instructional technology]. Time to us it. I would like to, even if I have to okay I'm going to play a lesson, use this or that software or this equipment. Give me time to do it…I think first and foremost it is just having the time to plan and implement.

In a similar response, Participant 3 discussed preferred delivery of training and development to include sharing stories about how instructional technologies benefit students and allow time for PD participants to share real-world experiences related to instructional technology implementation or application. Additionally, Participant 3 indicated the need for more training and development to absorb instructional technology:

> I feel like more training and development, professional development is needed, and more of like the beautiful stories of how the instructional technology has benefited certain students because some people want to hear from others as well. Get to a person explaining to them, telling them of the experience and what went well specifically to address the negative attitude.

Likewise, Participant 6 highlighted the need for time to learn and perfect using instructional technologies:

> Probably time. You know the support in giving in giving up and getting the training that we're asking for, and then giving time to us aside from the teaching day to perfect it… What I see as perfection is when I realized that the engagement

> that my students and I have is productive, and we know when our kids know that it's not productive. I know that feeling in the classroom, and I'll know the comfort level when I know that okay, we're on the right track when I know that they're getting what we need to get done. And I feel good about next steps.

Similarly, Participant 7 highlighted the need to build teachers' capacity to fully understand instructional technology PD topics before using with students. Participant 7 expressed the importance of "showing" teachers what they are supposed to do with the instructional technologies before expecting them to implement with students. Participant 7 discussed the need to focus PD efforts on what districts want us to implement:

> Professional development based on what they want us to implement would be great…If you're paying for Flipgrid, and I've never once used Flipgrid, I don't know anything about it… I want to make sure that it works. I'm not wasting time with other things I could be doing…Just show me what I'm supposed to be doing with this, what do you want out of this, instead of just saying here it is, run with it, and see how it goes. We can only do that so many times.

With a similar perspective, Participant 8 stated "continuing PD is always helpful" and noted that the district provided PD sessions to build teacher capacity with instructional technology as a central focus. Participant 8 recalled signing up for instructional technology PD sessions to "take on this new challenge" and "take it to the next level." Additionally, Participant 8 highlighted the need for continual PD and continuum to learn new instructional technology:

> I just think continuing PD is always helpful. They've started something a few years ago where there's a list of potential PDs, some of this technology, some of it isn't like mindfulness curriculum… that's really helpful to the kids for social emotional wellbeing, especially during the pandemic. They gave us choices, and we ranked our top three or five that we think would be helpful… It's a whole different mindset which I'm enjoying actually because I don't like to be afraid of things that's like my main goal because I used to be afraid of everything. So now I want to understand it more than being afraid of it.

With a slightly different perspective, Participant 4 expressed the desire to see "more training for the kid" related to computer classes supported by the school district. When asked to explain more, Participant 4 stated that "they come in knowing nothing," and teachers not only have to teach them how to use a device, turn it on, and learn functions. Participant 4 stated, "I've got to teach them to use the program" which is used in the classroom for academic growth and development. Participant 4 discussed the need for additional support and training for both teachers and students:

> I would almost love to see more training for the kid, and I miss having a computer class in our district… I'd love to see them actually have a computer class and somebody to train them on those kinds of things so that I could actually just use it [instructional technology] for teaching. They need to learn the basics, how to turn it on, basic computer skills, and… all things on the computer. They need to learn how to start typing sooner…evening teaching them internet safety, digital footprints, and all those things that they need to learn as they're learning how to

> use technology. I feel like that falls on us and I don't have time to teach that and reading and all of those things.

Similarly, Participant 5 highlighted that "I'm sure there's always something. I think that familiarity, the students are getting better. I think we need to include parents more." The training of parents, key stakeholders in the growth and development of a student, was an important topic of discussion to provide additional supports related to instructional technologies. Participant 5 focused on the need to include parents more in the area of instructional technology for teaching and learning, by stating:

> I think we need to include parents more and just do more training for them. Even having them watch some of our videos that we've made… how to use different pieces of technology…especially during COVID, that was a huge challenge, where parents didn't know where to find things. And I'm pretty positive their child knew how to. I think we spent a lot of time trying to walk them, parents, through how to do things.

In a similar response, Participant 9 expressed the need to train parents alongside teachers and students in the area of instructional technologies to keep everyone learning at a similar pace:

> We had a parent night… to explain to parents the expectations in terms of turning in assignments and help it go more smoothly at home. What we're saying to the students is not enough, and we need to tell the parents…Families could use additional support as well, like information that they didn't know before and have

> the administration show what something means… You're supposed to do this, you know parent education.

The theme addressed RQ2 and how K–12 teachers put into practice their learning from PD to support the use of instructional technology. The majority of participants perceived their learning from the PD to support the use of instructional technology as introductory or baseline with the district expectation, stated or implied, that teachers should learn instructional technologies prior to student engagement regardless of whether the PD provided met the learning needs or preferences of teachers. Several participants posited that additional support is necessary and needed to promote the use of instructional technology for all stakeholders involved including teachers, students, and families.

### *Theme 8: K–12 Teachers Believe They Have a Responsibility to Learn From the Professional Development to Support the use of Instructional Technology and Create a Classroom Environment, In-Person and Online, That Incorporated Collaboration, Engagement, and Adaptations to Maximize Teaching and Learning*

K–12 teachers believe they have a responsibility to learn from the PD to support the use of instructional technology and create a classroom environment, in-person and online, that incorporated collaboration, engagement, and adaptions to maximize teaching and learning. The theme addressed how K–12 teachers put into practice their learning from PD to support the use of instructional technology. The participants' responses revealed a pattern related the need to align instructional technology with relevance to the modern classroom and to anticipate a learning curve to stay ahead of the changes in instructional practices related to in-person, online, and digital platforms. Several

participants highlighted the need for alignment of current instructional technologies with relevant teaching, instruction, various learning curves, and a positive or proactive approach to build capacity in an everchanging educational landscape and transitions from traditional instructional practices to online and digital platforms.

Participant 5 recalled personal growth with technology related to various transitions to accept and learn instructional technologies along with individual learning needs or desires to remain relevant and current with technology initiatives. Participant 5 expressed the desire for variety and to remain current and relevant in order to meet the learning needs of students by stating:

> I've grown with my comfort, as far as using technology, and using a variety of technology. I don't want to be stuck on one thing; I want variety. I get bored, super easy. I don't want my students to get bored. I feel like I always have way more things in my tool belt that I could probably or possibly use. I want to use it all. My biggest struggle is to try to focus in on what's relevant.

Likewise, Participant 3 recalled learning instructional technology and taking on a focus toward ownership of learning. Participant 3 shared having a positive outlook and attitude toward instructional technology is a requirement to learn as much as possible in a very short period of time. Additionally, Participant 3 remarked that technology and instruction as an area of high interest and the responsibility for continual learning:

> Technology helps you be more organized and more focused and towards the owner learning phase. So, you feel like something in your life is moving on, you're learning and also moving to the next stage. I feel like it's also very hard for

> someone who's very new… It's something that you're required to do within a very short period of time, this is a new norm…This will be an opening for teachers, something better for themselves, but at the same time maintain they can help children achieve their goals.

With a similar perspective, Participant 4 shared the importance of a positive outlook and appreciation for the training provided. Additionally, Participant 4 discussed the timing of the PD sessions related to teacher capacity, availability, and absorbing the content. Participant 4 shared enjoyment related to PD training with notation of the timeframe of the PD offerings and participating responsibly:

> I do enjoy the training that we do have, but I think it also depends on when the trainings are offered. I know there's never a great time to give a PD because we're always busy. It seems like those PDs always come at the most inconvenient time…I wish there were a more appropriate time where you could actually feel relaxed and not overwhelmed when you go into a professional development. I would love for it to be a time that you know we can go to a professional developer and not have to be stressed out about the 100 other things that I'm supposed to be doing.

Likewise, Participant 9 shared perspective related to "the most effective learning opportunities for teachers" and the need for district administration to look at providing time for teachers to learn. Participant 9 shared that "the crash course" was challenging, and "I learned enough," but the most effective learning opportunities are those that include the opportunity to learn, discuss, practice, then implement and apply. Participant

9 discussed the need for systemic days and a professional responsibility toward being receptive to learning instructional technologies for teaching and learning:

> Having the PD, I think having it on those systemic days when we haven't worked a full day at the staff meetings. Afterwards trying to talk about, no, that's not the time to do it. Catch me on the off day, receptive to learning new things, and I haven't attempted to teach this, whether successful or not. I think those were the most effective learning opportunities for teachers.

The theme addressed RQ2 and how K–12 teachers put into practice their learning from PD to support the use of instructional technology. Many of the participants believed they have a responsibility to learn from the PD provided by their school district to support the use of instruction technology, create a classroom environment that incorporates collaboration, engagement, and make adaptations to maximize teaching and learning for in-person and online platforms. Several participants discussed a need to align current instructional technology with relevant teaching and instruction, learning curves, and a proactive approach to stay ahead of an everchanging educational landscape moving from traditional instructional practices to online or digital platforms.

## Summary

In Chapter 4, I presented the research study findings based upon the data collection and analysis that answered the two research questions. The data collected and coded included four emergent themes for each research question. Table 5 includes the eight themes developed and reflected in the overall results.

**Table 5**

*Eight Themes Developed and Reflected in Overall Results*

| | Themes |
|---|---|
| 1 | K-12 teachers receive professional development that supports the use of instructional technology but desire more preparation, training, practice, and follow-up. |
| 2 | PD and training K-12 teachers received for instructional technology focuses on access to instructional tool or program but provides little information on implementation and application. |
| 3 | K-12 teachers spend more time self-teaching and collaborating with colleagues to learn how to use and implement instructional technologies than is provided by schools or districts. |
| 4 | K-12 teachers perceive the professional development provided by their school district to support the use of instructional technology as baseline or a starting point with additional support needed to fully implement and apply to teaching and learning. |
| 5 | K-12 teachers believed their school district expected implementation and usage of instructional technologies on a daily or regular basis. |
| 6 | K-12 teachers have incorporated instructional technologies learned from district level or various forms of professional development to meet the learning needs of their students. |
| 7 | The majority of K-12 teachers perceived their learning from professional development to support the use of instructional technology as baseline or introductory with a district expectation for teachers to learn instructional technologies prior to student engagement regardless of if the PD meets the learning needs of teachers. |
| 8 | K-12 teachers believe they have a responsibility to learn from the professional development to support the use of instructional technologies and create a classroom environment, in-person and online, that incorporated collaboration, engagement, and adaptations to maximize teaching and learning. |

The results of my study indicated how K–12 teachers' perceptions and experiences of PD to support instructional technologies were used across different instructional platforms. Participants shared their perceptions and experiences related to PD provided by their school districts to support instructional technologies and how they put into practice their learning from PD to support instructional technology. The

participants provided invaluable insights regarding PD opportunities that were effective as well as areas of opportunity to build teacher capacity, stakeholder knowledge, and equip students for an everchanging educational landscape. In Chapter 5, I discuss the purpose of the study, interpretations of the findings, limitations of the study, recommendations, and suggestions for positive social change.

# Chapter 5: Discussion, Conclusions, and Recommendations

## Introduction

In this chapter, I discuss the interpretations of the findings according to each research question. The chapter includes a discussion of the limitations of the study grounded in the strengths and limitations of the current study and the literature reviewed in Chapter 2. The chapter also includes recommendations for future research and implications of my study related to positive social change.

The purpose of this basic qualitative research study was to investigate K–12 teachers' perceptions of PD that supports the use of instructional technology. I conducted this study to address a gap in the literature resulting from a limited number of studies available from the perspectives of K–12 teachers incorporating their voices regarding PD to support instructional technology. The conceptual framework undergirding the study was based on the SAMR model (Puentedura, 2009, 2013). I conducted nine interviews with K–12 teachers who participated in PD to support the use of instructional technology. After conducting, transcribing, and coding the interview data, I aligned the transcripts with recordings for accuracy. I used reflective journaling to address and avoid researcher bias when interpreting teacher responses.

When participating in PD to support instructional technology, participants identified the PD as a baseline or starting point to build teacher capacity and promote student learning. A key finding related to RQ1 was that participants received varied levels of PD to support instructional technology and desired additional training for implementation and application purposes. A key finding related to RQ2 was that

participants believed they had a professional responsibility to learn from the PD provided by their school district and to support instructional technology whether they instructed in-person, online, or hybrid classes. The above key findings are described in further detail in the interpretation of findings section.

## Interpretation of the Findings

I interpreted these findings given the empirical literature and the conceptual framework of the SAMR model (see Puentedura, 2009, 2012, 2013). I drew from Puentedura's SAMR model to analyze the experiences of K–12 teachers who participated in PD to support the use of instructional technology. Puentedura's (2013) conception of the SAMR model was premised on 21st-century learning including foundational, meta, and humanistic knowledge. The findings from my study are consistent with the concepts aligned with the SAMR model: substitution, augmentation, modification, and redefinition. In the current study, the PD to support the use of instructional technology created opportunities for K–12 teachers to build capacity and share areas of need to move beyond baseline PD necessary for implementation and application.

Through analysis of the data collected in my study, I identified eight themes regarding K–12 teachers' perceptions and experiences related to each research question. The alignment of the research questions and the eight identified themes is outlined in Table 6. In the following sections, I describe the alignment between the research questions and identified themes. I relate the findings to the conceptual framework and current literature.

**Table 6**

*Alignment of Research Questions and Identified Themes*

| Themes | Research questions |
|---|---|
| K-12 teachers receive professional development that supports the use of instructional technology but desire more preparation, training, practice, and follow up.<br>PD and training K-12 teachers received for instructional technology focuses on access to instructional tool or program but provides little information on implementation and application.<br>K-12 teachers spend more time self-teaching and collaborating with colleagues to learn how to use and implement instructional technologies than is provided by schools or districts.<br>K-12 teachers perceive the professional development provided by their school districts to support the use of instructional technology as baseline or a starting point with additional support needed to fully implement and apply to teaching and learning. | RQ1: What are K-12 teachers' perceptions and experiences of the professional development provided by their school districts to support the use of instructional technology? |
| K-12 teachers believed their school districts expected implementation and usage of instructional technologies on a daily or regular basis.<br>K-12 teachers have incorporated instructional technologies learned from district level or various forms of professional development to meet the learning needs of their students.<br>The majority of K-12 teachers perceived their learning from professional development to support the use of instructional technology as baseline or introductory with a district expectation for teachers to learn instructional technologies prior to student engagement regardless if the PD meets the learning needs of teachers.<br>K-12 teachers believe they have a responsibility to learn from the professional development to support the use of instructional technology and create a classroom environment, in-person and online, that incorporated collaboration, engagement, and adaptations to maximize teaching and learning. | RQ2: How do K-12 teachers put into practice their learning from professional development to support the use of instructional technology? |

**Research Question 1**

In addressing RQ1, I focused on K–12 teachers' perceptions and experiences of the PD provided by their school districts to support the use of instructional technology. I identified eight total themes with four themes specifically aligned with RQ1. The key findings outlined for each theme highlight the importance of incorporating teacher input and voice when determining PD to support instructional technology.

### *Theme 1: K–12 Teachers Receive Professional Development That Supports the use of Instructional Technology but Desire More Preparation, Training, Practice, and Follow-up*

Based on the theme, I developed a key finding. The first key finding of this study was that K–12 teachers who receive PD that supports the use of instructional technology believe PD is extremely important. PD designed with technology integration into the curriculum and instruction has increased in both F2F and online supports for teaching and learning (see Coleman et al., 2016). The modern technologies integrated into classrooms across the United States are broad and require PD training (see Ottenbreit-Leftwich et al., 2018). Furthermore, Davis and Hall (2018) declared teachers as crucial agents for innovation, change, and learner-centered teaching and learning with the technology advances of the 21st century. As crucial agents for the modern classroom, teachers are in a unique position to learn and grow as professionals with the added responsibilities to implement learning across multiple instructional platforms.

The participants of this study emphasized the need for additional PD preparation, training, practice, and follow up from their school districts. In this case, the additional

desires of the participants is another key point and important realization to support teacher growth and development, especially related to the advancement of instructional technology. Furthermore, the teachers indicated they believed that PD should be ongoing, and job-embedded with input from teachers that speaks to relevancy of daily classroom instruction, student learning needs, and instructional technologies. Under those circumstances, the finding was consistent with the recommendation of Archambault and Larson (2015), who emphasized the importance of ongoing and job-embedded PD for teachers shifting from a traditional to a learner-centered digital instructional model. In addition, Camilleri, and Camilleri (2017) posited that ongoing training and continuous PD must be provided to teachers of all disciplines to remain current with technological advancements.

The results of this study also confirmed Crompton and Burke's (2020) finding that teachers are consistently challenged with modern technologies that are believed to increase job performance. As noted by the participants, modern classrooms include diverse learning experiences aligned with standards-based instruction coupled with instructional technology integration and challenges that accompany changes in curriculum and instruction expectations. However, this finding differs from Ercan and Ivanova's (2020) conclusion that the educational opportunities provided for teachers to assist in the development of skills for use in the classroom did not necessarily promote teachers' growth due to higher levels of self-teaching or the lack of PD follow-up. The participants in this study indicated high levels of self-teaching, a lack of follow up, and lower than expected professional growth through the educational opportunities provided

by schools or districts. Although educational opportunities may have been provided to teachers, many of the participants spent countless hours learning on their own about instructional technologies to build capacity and navigate uncharted waters before implementing with students. Although the participants' schools and districts provided PD to support instructional technology, notably the participants expressed determination to learn the programs and tools necessary for teaching and learning, regardless of whether they received direct instruction or follow-up supports.

Teachers in this study described the importance of building teachers' capacity through effective PD that supports building teacher capacity to learn instructional technologies with higher levels of insight and proficiency prior to implementation. This study finding aligns with and confirms Hutchison and Woodward's (2018) finding that teachers' preparations to design learning experiences with meaningful technology are critical to meet the expectations of students' learning including what teachers should know and be able to do. The effectiveness of learning experiences and PD focused on meaningfulness of instructional technology is interesting in relation to Puentedura's (2009) SAMR model and central to transformative teaching and learning processes.

### *Theme 2: PD and Training K–12 Teachers Received for Instructional Technology Focuses on Access to Instructional Tool or Program but Provides Little Information on Implementation and Application*

The second finding that emerged from the data was that K–12 teachers believe access to instructional tools or programs is a starting point to help teachers build capacity aligned with instruction. However, teachers in this study expressed that PD and training

received for instructional technology need to move beyond basic levels of how to access a tool or program with provisions made to equip teachers with higher levels of information to fully implement and apply instructional technologies. Findings in this study support the positions of Cadero-Smith (2020), who noted that using educational tools requires training, tutorials, and implementation plans with opportunities for PD, mentorship, and practice between trainings to atone for the learning needs of teachers. Teachers in this study experienced the shift from a traditional instructional model to a digital, online, or blended platform. This theme also added to the findings of Gunter and Reeves (2017), who highlighted that new approaches, tools, resources, and environments call for a pedagogical shift and require additional coaching that provides teachers with effective pedagogical and technological supports to bridge a gap between beliefs and practice.

This finding aligns with the discoveries of Pride (2016), who recognized that SAMR model afforded teachers the opportunity to reclassify classroom experiences necessary for scaffolding and using technology. Technology in education is considered an area of change, as noted by McQuirter (2020), and one that has been problematic. Because teachers in this study described PD that supported instructional technology with varied levels of support, they provided compelling evidence regarding challenges related to time, constraints, barriers, training, and capacity. Comparatively, Adams (2019) determined that the integration of technology and educational technology frameworks includes barriers, limitations, preconceived perceptions, school climate and culture, and technology access. Additionally, the findings in the study support the positions of Gunter

and Reeves (2017), who found that the evolution of education technology requires ongoing, job-embedded training, practice, and application to move theory into practice.

### *Theme 3: K–12 Teachers Spend More Time Self-teaching and Collaborating With Colleagues to Learn how to use and Implement Instructional Technologies Than is Provided by Schools or Districts*

The third key finding was that many of the participants spent time self-teaching and collaborating with their colleagues to learn how to use and implement various instructional technologies. All participants received PD provided by their schools or districts with an emphasis on instructional technologies. However, the varied levels of PD support specific to instructional technologies fell short for most participants as many spent a consistent amount of time self-teaching or collaborating with other teachers to build capacity and proficiency levels prior to implementation or usage with students.

This finding was consistent with the recommendations of Admiraal et al. (2017), who noted an increased use of technology in society requires teachers to change teaching and learning practices aligned with innovations of teaching with technology. Furthermore, Davis and Hall (2018) recognized teachers as crucial agents for innovations and changes for 21st-century learning based on a learner-centered instructional focus and technological advances. The participants' perceptions concurred with Coleman et al. (2016), who promoted the need for in-depth PD and training that advance computing integration into the curriculum, lesson planning development with computers as the primary tool, and an emphasis on program knowledge. Additionally, the key finding of my study aligned with Powell and Bodur (2019), who noted that researchers question

effective teacher PD with ongoing concerns related to one-time workshops and the lack of follow up, collaboration, or reflective practice. Many participants expressed concerns with one-time PD sessions and effective training practices to fully prepare teachers to meet the demands of 21st-century learning and implementation of instructional technologies.

### *Theme 4: K–12 Teachers Perceive the Professional Development Provided by Their School Districts to Support the use of Instructional Technology as Baseline or a Starting Point with Additional Support Needed to Fully Implement and Apply to Teaching and Learning*

The fourth key finding was that teachers perceived the PD provided by their school district as a starting point or baseline. Many participants included in this study expressed appreciation of their school districts for providing PD and noted that additional support was needed to fully implement and apply instructional technologies to teaching and learning. The finding was consistent with Hutchison and Woodward (2018), who found that technology integration was an important PD topic necessary for teachers to acquire the skills needed for 21st century learning. Furthermore, the data gained from the experiences of the participants supports Bogen et al. (2019), who emphasized the importance of planning PD to provide teachers with the necessary educational technology to address various learning styles, aid the development of learning and differentiation, and address long-range curriculum plans.

A shift in educational technology required teachers to adapt and learn the advancements in instructional technology developments to drive curriculum and

instruction while teaching academic standards, a noted consistency with the study conducted by McBain (2018). Additionally, my findings align with Archambault and Larson (2015), who emphasized the importance of ongoing and job-embedded PD for teachers transitioning from a traditional to a learner-centered and digital instructional model. In the same fashion, this study concurs with Camilleri and Camilleri's (2017) finding that ongoing and continuous PD must be provided to teachers across all disciplines to remain current and abreast of the latest technological advancements or developments. Furthermore, the participant's perceptions and experiences align with and confirm Crompton and Burke's (2020) findings that teachers are consistently challenged with modern technologies believed to increase their job performance. This study also affirms Hutchison and Woodward's (2018) assertion that teacher preparations for designing learning experiences through technology integration is critical to meet the expectations of teaching and learning for the modern classroom. Finally, the instructional requirements and advancements in educational technology across all learning platforms and content areas present the need to view PD as an opportunity to build teacher capacity with intentionality and purpose.

**Research Question 2**

For RQ2, I focused on how K–12 teachers put into practice their learning from PD to support the use of instructional technology. I identified eight themes central to my research study with four themes aligned with RQ2. The key findings generalized for each theme underscore the importance of equipping teachers with the knowledge and skills to put into practice their learning from PD to support the use of instructional technology.

### *Theme 5: K-12 Teachers Believed Their School Districts Expected Implementation and Usage of Instructional Technologies on a Daily or Regular Basis*

The fifth key finding was that K-12 teachers believed their school districts expected implementation and usage of instructional technologies on a daily or regular basis. In order for this to occur, the participants believed that the PD provided by schools or districts should further teacher understanding of the instructional technologies provided and supported by their school districts. This finding adds to the work of Zhang et al. (2021), who indicated that the learner-centered teaching focuses on students' learning through individualized instruction and throughout a learner-centered organization. Whereas the participants included in this study were K-12 teachers, it is important to remember that they were also students when participating in PD to support instructional technology implementation and application.

In today's modern classroom, the instructional focus has moved from a teacher-centered to a learner-centered approach, especially when linked to the SAMR model. This study confirms the work of Admiraal et al. (2017), who pointed out that learner-centered instruction embodies the students' responsibility for learning, knowledge construction, and collaboration. Additionally, the participants, K-12 teachers, believed they were responsible for learning, constructing knowledge, and collaborating to build understanding of instructional technologies prior to implementation with students. The noted responsibility was evident by the amount of time the participants invested in learning instructional technologies relevant to their schools and districts. The participants' experiences aligned with the research of Morrow and Lee (2019), who noted

that in the learner-centered classroom the teachers must transition from a teacher-centered to a learner-centered instructional model. Similarly, my findings align with the guiding thoughts of Zhang et al. (2021), which indicated that the development of the learner-centered principles promote the implementation of educational technology.

As recorded by Admiraal et al. (2017) a change in teaching practices, technological advances, and 21st century instructional standards significantly challenged teachers' beliefs and attitudes toward technology and created directional shifts toward a learner-centered classroom. In addition, the participants' perceptions aligned with Admiraal et al. (2017) who noted a corresponding change in the beliefs and attitudes toward instructional technology. Plus, the information from this study aligned with the work of McBain (2018), who highlighted that teachers must understand diverse learning needs within their classrooms, implement best practices, engage students in learning, and overcome the barriers presented by technological advancements.

The findings supported the work of An and Mindrila (2020), who determined that teaching and instruction in the learner-centered classroom that supports technological advancements is drastically different. The results of my study align with the notion presented by An and Mindrila (2020) that teachers are also learners who require varied PD instructional practices and trainings to build teacher capacity prior to implementation. Participants believed their school districts expected implementation and usage of instructional technologies on a daily or regular basis to build student learning in all content areas and across all learning platforms. In today's multimedia rich society and

educational environments, full immersion of instructional technology was ultimately a nonnegotiable in the modern classroom.

### *Theme 6: K-12 Teachers Have Incorporated Instructional Technologies Learned From District Level or Various Forms of Professional Development to Meet the Learning Needs of Their Students*

The sixth key finding of this study was that K-12 teachers incorporated instructional technologies they learned from district level or various forms of PD to meet the learning needs of their students. The perceptions of the participants confirm the work of Bogen et al. (2019), who expressed the importance of planning PD related to educational technology, to address varied learning styles, differentiation, improvements aligned with long-term curriculum plans, and systemic change. Additionally, my findings based upon participants' responses, denote that K-12 teachers transfer learning from PD to classroom instruction and focus on meeting the learning needs of their students.

My findings also align with the work of Gunter and Reeves (2017), who posited that differentiated instruction is a key trend in education linked with technology integration and support to reach diverse learners across all instructional platforms including F2F, blended, and online learning. Ismajli and Imami-Morina (2018) also observed that differentiated instruction for teachers required educational experiences including high-level thinking, responsiveness to individual learning needs, authenticated tasks to build capacity and collaboration across learning platforms. The participants included in this study believed PD to be an important aspect of their professional

responsibilities to embrace learning instructional technologies then apply to teaching and learning.

Teachers in this study expressed an appreciation for their schools or districts that provided PD opportunities in support of the use of instructional technologies to build capacity in technological advancements for teaching and learning. This study extends the knowledge of Flavell et al. (2019), who remarked that teachers who use 1:1 technology are at a greater advantage compared to teachers who are without device accessibility and the technology access provides a means to differentiate, enrich, and meet 21st century standards. The participants expressed how the instructional technologies allowed them an opportunity to differentiate and tailor instruction throughout their classrooms to meet the diverse learning needs of their students while promoting and encouraging academic achievements, also aligned with the findings of Flavell et al. (2019).

### *Theme 7: The Majority of K-12 Teachers Perceived Their Learning From Professional Development to Support the use of Instructional Technology as Baseline or Introductory With a District Expectation for Teachers to Learn Instructional Technologies Prior to Student Engagement Regardless if the PD Meets the Learning Needs of Teachers*

The seventh key finding of this study was that the majority of K-12 teachers perceived their learning from PD to support the use of instructional technology as a baseline or introductory level with a district expectation for teachers to learn the instructional technologies prior to student engagement regardless if the PD meets the learning needs of teachers. Several participants in the study expressed appreciation for

their schools and districts for providing PD to support instructional technology and building teacher capacity. Whereas other participants in the study believed the PD to support instructional technology failed to meet the learning needs of teachers.

The finding bolsters the work of Borup and Evmenova (2019), who noted that districts across the United States face a growing number of online learning communities in K-12 with an increased need to prepare teachers for different competencies and PD aligned with digital, blended, and online instruction. The participants' responses confirm the challenges noted by McQuirter (2020), where districts across the United States and across the globe shifted to online learning due to the COVID-19 pandemic, which presented educators at all levels with the challenges involved in converting F2F instruction to online learning. The shift in instructional platforms confirms the work of Ally (2019), who noted forces shaping education and technology development across K-12 districts with an emphasis on educational progress related to the digital era, adaptive and individualized learning, technological advancements, and internet capabilities to meet the demands of 21st century learning.

The findings from my research study provided evidence which highlighted the barriers and benefits emphasized by Gros (2016) regarding 1:1 technology with the increased demands of online teaching and learning, instructional issues, and knowledge levels of teachers. Likewise, this study extends the work of Ally (2019), who highlighted multiple forces placed on the educational systems, administrators, and teachers with an emphasis of transformation of teaching and learning within a moment's notice, which drastically changes the role of the teacher. Additionally, the findings confirm the work of

McQuirter (2020), who focused on the basic principles of building upon strengths current practices, teacher collaboration, and a focus on systemic multi-level implementation supports as the building blocks for innovative changes for all grade levels and curriculum. Furthermore, the data from this study reinforces the work of Powell and Bodur (2019), who posited that PD is not a one-size fits all approach or platform to build teacher understanding and capacity.

### *Theme 8: K-12 Teachers Believe They Have a Responsibility to Learn From the Professional Development to Support the use of Instructional Technology and Create a Classroom Environment, In-Person and Online, That Incorporated Collaboration, Engagement, and Adaptations to Maximize Teaching and Learning*

The final key finding of this study was that the K-12 teachers believed they have a responsibility to learn from the PD to support the use of instructional technology and create a classroom environment, whether in-person or online, that incorporates collaboration, engagement, and adaptations to maximize teaching and learning opportunities. The participants' responses align with the work of Ally (2019), who emphasized that when schools and districts consider teacher PD to support instructional technology they must consider investing in PD that ensures digital preparedness that aligns with educating students in a virtual platform using emergent technologies. The finding also aligns with the work of Riegel and Mete (2017), who posited that PD should provide teachers with active learning opportunities that increase skills and knowledge to prompt changes in classroom practices.

The work of Kaden (2020) highlighted that teaching and learning in the digital age requires flexibility and accessibility through learning opportunities, which affords teachers and learnings the means to connect through digital, blended, or online learning platforms. The participants in this study were part of a transition from the traditional instructional classroom model to a demonstrated digital, blended, or online instructional platform, especially during the COVID-19 pandemic crisis. The study confirms that moving forward, educational learning communities including K-12 teachers, should understand that individuals are built to learn and seek opportunities to obtain knowledge and skills relevant to personal interests, play, and work (see Riegel & Mete, 2017). Additionally, the findings support the research of Moore et al. (2017), who communicated that PD platforms for K-12 teachers should include examples matched with research-based best practices and instructional strategies, along with implementation processes to connect what was learned and applied to existing classrooms. The participants in this study believed they were transferring what was learned in PD to support the use of instructional technology, adapting, and creating a classroom atmosphere that engaged students in the collaborative learning processes.

## Limitations of the Study

I considered five limitations when analyzing the findings of this qualitative research study. The following limitations were considered for this study: sample size, inclusion criteria, participant self-selection, time of research, and researcher bias. I used a small sample size including nine teachers who taught grades K-12 located in various locations across the United States. Sample size and inclusion criteria could limit the

generalizability of the study. The inclusion criteria for participation called for K-12 teachers who participated in PD to support the use of instructional technology, experienced teaching in a traditional setting with a transition to a digital, online, or blended learning platform, and from a school setting located in the United States. The participants were volunteers and opted in through self-selection. The research was conducted in the midst of the COVID-19 pandemic, which was an additional limitation of this study due to time constraints and social distancing. Research bias was the final limitation of this study. My experiences with PD and instructional technology integrations based on my personal views were taken into consideration when conducting the interviews. To mitigate the any adverse effects of researcher bias, I used reflective journaling which helped to separate my perceptions and opinions from my interpretation of the participants' responses.

## Recommendations

The access to high quality PD is essential to the continual growth and development of teachers across all disciplines and areas of concentration. The use of instructional technology in classroom provides teachers and students access to learning resources that prepare learners to for real-world application. Because instructional technology is continually evolving and changing, teachers must have access to quality PD to keep up with the everchanging educational landscape with a focus on relevancy, preparedness, implementation, and application (see Utecht & Keller, 2019). As a result, additional studies are needed in the following areas:

- Further basic qualitative research studies on teachers' experiences with access to a PD plan including initial training and intentional, preplanned follow-up trainings aligned with implementation practices and application
- Exploration of the perceptions and experiences of a teachers' use of instructional technologies within a specific grade level or area of concentration
- Additional research focused on the benefits and challenges of using instructional technologies with a specific group of teachers, grade level, or area of concentration
- Quantitative research focusing on teachers' successes and outcomes relevant to an instructional technology tool or program aligned for the modern classroom rather than a traditional instructional model

The findings from this study provide evidence that schools offer PD sessions central to instructional technologies and the modern classroom, but a gap in PD plans and opportunities exists to address the learning needs of teachers related to instructional technologies and ongoing job-embedded supports. The findings from this study also indicated the need to incorporate teachers' voices during discovery of PD needs to prepare and train teachers with ongoing and job-embedded PD that is proactive, timely, and relevant to the modern classroom. Overall, the findings clearly indicate that future research topics related to instructional technologies and necessary PD preparations are needed for trainings to build teacher capacity, incorporate teacher voice and opinions as the frontline professionals who work directly with students in the modern classroom.

## Implications for Social Change

This study on K-12 teachers' perceptions of the implementation of PD to support instructional technology is meaningful to the field of education as teachers contribute meaning and promote positive social changes in teaching and learning. This study establishes a framework for how K-12 teachers' PD experiences and perceptions influence their use of instructional technology in their classrooms. Moreover, the study adds invaluable insight to an ongoing field of education research by addressing how PD may impact the modern classroom through building teaching capacity and efficacy which ultimately impacts teaching and learning opportunities in an everchanging technologically advanced world. The results indicated that the K-12 teachers' perceptions and experiences of PD impacted teaching and learning which then transfers to student learning.

Walden University promotes and values positive social change. The potential reach of the findings should be of considerable influence within school districts and other organizations to prompt positive social change in current PD practices to support instructional technology integration. The information gained from the study could support and contribute to positive social change by suggesting that school districts provide transparent and intentional teacher PD plans that include introductory and advanced levels of training through ongoing and job-embedded training, purposeful follow-up to support instructional technology integration for teaching and learning. To implement the positive social change, the consideration of teachers' input and voice for instructional technology PD needs should be included prior to building the plan.

Additionally, the PD plan for the school year should be disseminated to teachers with plenty of advance notice with any necessary materials prior to delivery, along with clear and concise expectations for teacher participation, input, and feedback. Furthermore, to implement a continual PD plan focused on instructional technologies to build teacher capacity and efficacy, the school or district must consider the appropriate funding sources, budgetary guidelines, and sustainability plan when developing higher leveled PD opportunities year after year.

By providing an in-depth understanding of K-12 teachers' perceptions and experiences of PD to support instructional technology, this study may also help to inform educators about the importance and usefulness of PD to build teacher capacity for an everchanging educational technology enhanced landscape. Additionally, the results of this study can be used as a foundation for additional studies related to PD, instructional technology, and building teacher capacity and efficacy. The results of this study may also assist in building insights on the importance of creating positive social change through research specifically related to providing teachers with PD to support instructional technology.

## Conclusion

The PD and training K-12 teachers receive to support instructional technology is not only essential to the ever-changing educational landscape, but important to the various platforms not used to deliver instruction and courses. This study explored K-12 teachers' perceptions of PD that supports the use of instructional technology. All participants received PD to support the use of instructional technology, but at varied

levels provided by their schools or districts. The conceptual framework for this study, the SAMR model, was based on the work of Puentedura (2009, 2012, 2013), which included substitution, augmentation, medication, and redefinition with a transition from a traditional instructional model to a digital, blended, or online instructional platform. The participants shared invaluable insights based on their range of PD experiences and perceptions that will inform the field of educational on the importance of teacher voice to build PD plans relevant to supporting the use of instructional technology.

Multiple researchers have argued that ongoing and job-embedded PD is an essential component to continually building teacher capacity and efficacy (Archambault & Larson, 2015; Camilleri & Camilleri, 2017; Gunter & Reeves, 2017; Kaur, 2020; Xie et al., 2017). Researchers have also argued that for PD to be effective, the training teachers receive must be relevant to teachers' needs, build upon strengths or current practices, and offered through ongoing and job-embedded instructional supports for the transition from a traditional instructional model to a digital, blended, or online instructional platform (Xie et al., 2017). Notably, the participants of the study indicated that PD to support the use of instructional technology was focused on access to an instructional tool or program and provided little information regarding implementation and application. Equally important, the participants reported that K-12 teachers spend more time self-teaching and collaborating with colleagues to learn how to use and implement instructional technologies than was provided by schools or districts. The findings present alignment with the recommendations of Kaur (2020), who reasoned that

PD should target the growth and development of every teacher through ongoing, highly effective, subject and grade specific supports through targeted professional training.

This study provides the field of education, administrators, and teachers with an opportunity to view and use the results as a guide for potential useful, effective, and innovative insights that can be used when preparing and planning PD sessions to teachers in the area of instructional technologies. Administrators at all levels should also be included in the effort in terms of providing additional supports to teachers that promote the use of innovative instructional technologies in all subject areas, grade levels, and disciplines. Teachers and administrators have a responsibility to educate students based upon 21st century academic standards, the modern classroom, and skill development aligned with instructional technologies and advancements. Accordingly, teachers should look for opportunities to engage in ongoing, job-embedded PD sessions and training to build capacity and remain current with an everchanging educational landscape and equipped to teach in various instructional platforms, including in-person, digital, blended, or online.

I challenge instructors and administrators to not only continue to identify ways to provide PD for teachers to support instructional technologies, but also invite other instructors, administrators, and PD trainers to use the conceptual framework of this study, the SAMR model, innovative practices, and the power of teacher input to inform and drive changes in education. In doing so, the teachers, administrators, educational leaders, and trainers can aspire to increase and build teacher capacity and efficacy, which will ultimately increase teaching and learning opportunities to build student capacity and

individual and collective successes as technology continues to evolve and shape our world.

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# Appendix A: Interview Guide

[Read to participant] Thank you for agreeing to participate in this research study and share with me your perceptions and experiences. This research project is focused on exploring the perceptions and experiences of K-12 teachers regarding professional development that supports the use of instructional technology. The purpose of this research project is to examine teachers' perceptions regarding the role of the school district to provide PD to support instructional technology, teachers' perceptions about PD training, and preferences when receiving PD, including face-to-face, online, or hybrid approaches. The results of this study will potentially emphasize the importance of teachers' voice when determining and providing PD to support the use of instructional technology. The information you provide today will be kept confidential and secured in safe place for five years, at which point will then be destroyed. This interview will last between 45 to 60 minutes and will be recorded with your consent. Do you consent? [Turn on Zoom recording and begin the interview.]

Interviewee's Name:

Interview Date:

Appendix B: Interview Questions

| Background Information / Demographics<br>Prompt: [Please share with me about your teaching background.] | | **Responses** |
|---|---|---|
| 1 | What grade or course level do you currently teach? | |
| 2 | How long have you been teaching? | |
| 3 | How would you describe your teaching experiences in the traditional, blended, or online instructional platforms? | |
| RQ1: What are K-12 teachers' perceptions and experiences of the professional development provided by their school districts to support the use of instructional technology? | | |
| 4 | Tell me about the professional development support provided by your district. | |
| 5 | How well is the PD support working for you? | |
| 6 | What would you like to learn about using instructional technology? | |
| 7 | How are the PD trainings filling this need? | |
| 8 | What was the PD experience like? | |
| 9 | How has PD helped you with instructional technology? | |
| 10 | What makes professional development effective for you? | |

| | | |
|---|---|---|
| RQ2: How do K-12 teachers put into practice their learning from professional development to support the use of instructional technology? | | |
| 11 | How does the district expect you as the teacher to use instructional technology? | |
| 12 | What successes are you experiencing as you use technology for instruction? | |
| 13 | What challenges are you experiencing as you use technology for instruction? | |
| 14 | What additional support is needed to aid the use of instructional technology? | |
| 15 | What else would you like to add? | |
| **Closing Statement:** Thank you for taking time to meet with me today. You have given me insight into your perceptions and experiences related to professional development that supports the use of instructional technology. | | |
| **Follow-up Statement:** I will be transcribing this interview over the next few weeks and will email you to complete the member checking process and ask any clarification questions, with a limit of no more than five questions. If you think of anything else that you would like to add, you may do so when I send the follow-up email to you. Please feel free to contact me with any additional | | |

| | |
|---|---|
| questions. I sincerely appreciate your time and willingness to share with me today and allowing me to use your expertise to inform the field of education on this important study. | |

# Appendix C: Participant Invitation

Dear Invitee,

My name is Angel Hunt, a Walden University doctoral student in the Education Program—Curriculum, Instruction, and Assessment. I am kindly requesting your participation in a doctoral research study focused on the K-12 teachers' perceptions of professional development to support instructional technology. The intent of this study is to explore teachers' perceptions of professional development as it relates to instructional technology.

The study involves completing general demographic information and an interview. Participation is completely voluntary, and you may withdraw from the study at any time. Participants and their data will be kept confidential. Your participation in the research study will assist with positive social change and inform the field of education regarding the importance of teachers' perceptions and experiences central to professional development to support instructional technology. Thank you for your time.

Sincerely,

Angel Hunt, Doctoral Student, "Walden University"

Appendix D: Social Media Flyer