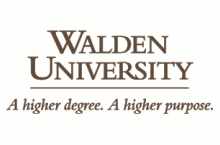

2020

Perspectives of Elementary Teachers Implementing Blended Learning While Participating in Virtual Coaching

Jessica Kristin Anderson

Walden University

Walden University

College of Education

This is to certify that the doctoral dissertation by

Jessica Kristin Anderson

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

Review Committee
Dr. Darci J. Harland, Committee Chairperson, Education Faculty
Dr. Gladys Arome, Committee Member, Education Faculty
Dr. Marcia Griffiths-Prince, University Reviewer, Education Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

Walden University
2020

Abstract

Perspectives of Elementary Teachers Implementing Blended Learning While Participating in Virtual Coaching

by

Jessica Kristin Anderson

MA, Montana State University, 2012

BS, Pacific Lutheran University, 2007

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Education

Walden University

May 2020

Abstract

As the use of blended learning in classrooms has increased across the United States, it is important to provide differentiated professional development and support to educators. As a technology-enabled form of professional development, virtual coaching connects teachers with experts in the field. However, the usefulness of individualized virtual coaching as a differentiated professional development support for elementary teachers implementing blended learning is not well understood. Using Kolb's experiential learning theory and Magana's T3 framework, the purpose of this basic qualitative study was to explore elementary teachers' perspectives on the usefulness of individualized virtual coaching in supporting blended learning implementation and to determine how the level at which the teachers used technology influenced their perspectives. Semistructured interviews were conducted with 12 K-5 teachers who participated in at least 1 year of virtual coaching for blended learning. Interview data were analyzed using a priori and emergent coding. Results indicated teachers at higher modes of cognitive processing and higher levels of technology innovation found virtual coaching useful for (a) the implementation of technology tools and strategies, (b) for shifting instructional practices for student impacts, and (c) for reflective practices for professional growth. This study contributes knowledge to the field of blended learning professional development and furthers understanding of virtual coaching as an innovative approach to professional learning. The findings may contribute to positive social change in that school districts can make informed professional development decisions that provide a convenient and flexible means for K-5 teachers to access expert support for blended learning implementation.

Perspectives of Elementary Teachers Implementing Blended Learning While Participating in Virtual Coaching

by

Jessica Kristin Anderson

MA, Montana State University, 2012

BS, Pacific Lutheran University, 2007

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Education

Walden University

May 2020

Dedication

This dissertation is dedicated to the most amazing man in the world, my husband, Chris Anderson. His encouragement, confidence in my abilities, and willingness to carry a heavier lift for our family is the reason this dissertation is complete. I would not have accomplished this feat without him and will always be deeply appreciative of his personal sacrifices.

To my boys, Bryer and Jase, thank you for your unconditional love and support, and for allowing me to model for you perseverance through challenges and wins. Always know you can accomplish big goals and do hard things too! Even though you may never read this dissertation, know you played a big role in its completion. Bryer, I am finally done and now you can call me Dr. Mom.

Thank you to my parents, Duane and Karen, for always trusting in me, giving me the foundation I needed to reach this education milestone, and holding Tuesday date nights with my boys so I could write. I will forever be grateful for your support! To my in-laws, Jim and Brenda, thank you for your encouragement and for raising the man who did everything he could to support me on this journey.

To my friends and colleagues, thank you for the accountability, the words of encouragement, and talking me off the ledge when things felt too hard. In particular, thank you to my friends Anna, Chris N., Crista, Eric, Heather, John, Melyssa, and Nikki, who shared the best advice, supported me when I was stuck or needed time, and constantly kept me moving forward. I hope others find friends just like you!

Acknowledgements

I have earned a doctorate degree because I have stood on the shoulders of many giants. First, I acknowledge the role my late grandmother, Dorothy Matthew, played in my journey into education. Second, I acknowledge how education and guidance from experts and mentors in my education (Julie, Dr. Benham, Dr. Foley, Jules, Jacquie, Ron, Lee, Rick, Kerry, John, Kathy, Gary, Jess) set me up to become a great science teacher and educational leader. I was able to pursue and complete a doctorate degree because of you! Third, I acknowledge the role my place of employment and my colleagues had in my growth as an instructional coach and leader, and how their actions made it possible to bring this research to the world. Thank you!

A big thank you to Dr. Darci Harland (chair), Dr. Gladys Arome, and Dr. Marcia Griffiths-Prince, for being the team I needed to accomplish this big task. Your advice pushed my research and my skills as a researcher, thank you! In particular, thank you, Dr. Darci Harland. You are the epitome of the BEST dissertation chair and mentor anyone could ever ask for. You have ‘a way’ with knowing when to encourage, when to question and push, and when to pull out the full stop because a conversation is needed. It was always exactly what I needed in the moment. Your commitment to my success was what kept me moving forward and, because of that, I am deeply grateful for you!

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction to the Study

Introduction

Virtual coaching in education focuses on the methodology of coaching in a digital setting while maximizing coaching practice and technology-enabled professional development, including bug-in-ear coaching (BIE), video-based coaching, and web-based coaching, for preservice and inservice education practitioners. As a technology-enabled form of professional development virtual coaching focuses on digitally connecting coaching participants with their coaches by providing a cost-effective, easy to access flexible approach to coaching from experts in the field (Anthony, Gimbert, Fultz, & Parker, 2011; Carmouche, Thompson, & Carter, 2018; Lee, Nugent, Kunz, Houston, & DeChenne-Peters, 2018; Leighton et al., 2018; Matsumura, Bickel, Zook-Howell, Correnti, & Walsh, 2016) while growing the skills and knowledge of coaching participants through virtual feedback and discussion (Barton, Pribble, & Chen, 2013; Barton, Rigor, Pokorski, Velez, & Domingo, 2018; Carmouche et al., 2018; Nugent, Kunz, Houston, Kalutskaya, & Pedersen, 2017). At present, virtual coaching has played a role in providing targeted support for educators across disciplines and grade levels yet has not been explored as a useful tool for individualized professional development for the implementation of blended learning. Blended learning, the combination of face-to-face and online learning, is a pedagogical shift in instruction requiring teachers to build a collection of innovative strategies aligned to a new mode of teaching and learning (Jonker, März, & Voogt, 2018; Powell et al., 2015). Although elementary teachers are being asked to shift their instruction, they are often not provided the differentiated

support they need to transition from face-to-face instruction to blended instruction (Prouty & Werth, 2015; Ramadan, 2017; Varier et al., 2017).

The purpose of this basic qualitative study was to explore the perspectives of elementary teachers on the usefulness of individualized virtual coaching in supporting their blended learning implementation. This study contributes knowledge to the field of blended learning professional development by sharing the experiences of elementary teachers participating in virtual coaching while implementing blended learning and furthers understanding of virtual coaching as an innovative approach to professional learning to support professional development decisions of school administrators. This study fills a gap in the literature by sharing insights from elementary educators receiving support for blended learning implementation. Data from this study provides insights into how well virtual coaching functions as an innovative replacement for face-to-face or internal coaching to support elementary teachers in implementing blended learning. Therefore, results of the study provide administrators the information and leverage they need to better support elementary teachers with blended learning implementation through alternative professional opportunities, reaching beyond one-and-done professional learning models.

Chapter 1 begins with a review of the background literature informing the problem statement, purpose of the study, and research questions of which are also included in this chapter. Next, the conceptual frameworks for this study are identified and justification for their use is provided. In the next sections, the nature of the study is reviewed and important definitions from the literature are shared. Finally, the chapter

concludes with the assumptions, scope and delimitations, limitations, and the significance of the study through potential contributions.

Background

Through the examination of empirical research on types of virtual coaching, including BIE, video-based coaching, and web-based coaching, emerging themes include types of professional development through virtual coaching and teacher perspectives on virtual coaching. When research from the themes is considered, virtual coaching includes a supportive coach who provides opportunities for feedback and reflection using methodologies that are convenient and flexible while supporting the growth of education practitioners and their students. Although much research has been conducted on the perspectives of teachers using BIE coaching via qualitative methods, limited studies have looked at varying approaches to professional development through BIE coaching (Ottley, Piasta, Coogle, Spear, & Rahn, 2018; Storie, Coogle, Rahn, & Ottley, 2017), specifically studies using quantitative methodologies. Additionally, a limited number of studies within the last five years have focused on teachers' perspectives while participating in video-based coaching (Gregory et al., 2017; Kennedy & Lees, 2016; McLeod, Kim, & Resua, 2018; Suhrheinrich & Chan, 2017) or web-based coaching (Barton et al., 2018; Carmouche et al., 2018; Matsumura et al., 2016; Shannon, Snyder, & McLaughlin, 2015a). However, empirical quantitative research has been conducted on professional development through virtual coaching for both video-based and web-based coaching.

In terms of participant populations, much research has been conducted with general and special education early childhood and preschool inservice and preservice

teachers on teacher perspectives in BIE coaching, but only two studies focused on professional development through virtual coaching (Ottley et al., 2018; Storie et al., 2017). In contrast, participant population varies with video-based and web-based coaching. When looking at professional development through virtual coaching, participant populations for video-based coaching consist of early childhood preservice and inservice teachers, middle school teachers, and high school, but no elementary teachers. In comparison, participant populations for web-based coaching consist of a larger focus on early childhood (Barton et al., 2013; Barton et al., 2018; Hemmeter, Snyder, Kinder, & Artman, 2011) and elementary teachers (Vernon-Feagans, Kainz, Ginsberg, Hedrick, & Amendum, 2013) than middle school, preservice, or high school teachers. With this in mind, this study extends what was understood about elementary and early childhood teachers via web-based virtual coaching, with a particular focus on the individualization of web-based coaching which was the focus of only one research study (Leighton et al., 2018). In terms of conceptual frameworks, no research studies focused on Kolb's (1984) experiential learning theory or Magana's (2017) T3 framework. This identified gap served as a lens for looking at the usefulness of individualized professional development through virtual coaching in this study. Furthermore, no research studies have examined the perspectives of teachers, at any grade level, implementing blended learning while participating in virtual coaching, including BIE, video-based, or web-based coaching. The results of this study provide a new understanding on the perspectives of teachers participating in virtual coaching, while

filling a gap on the role of web-based coaching in implementing blended learning into elementary classrooms.

Emerging themes from literature related to the implementation of blended learning in elementary classrooms included the successful implementation of blended learning and the challenges encountered implementing blended learning in K-5 classrooms. When research from the themes is considered, blended learning can positively impact elementary students' performance, attitudes, and interests (Firdaus, Isnaeni, & Ellianawati, 2018; Hui, Mai, Qian, & Kwok, 2018) in a variety of contexts when intentionally and successfully designed and implemented in the classroom. Although much quantitative research has been done on the impacts of blended learning models on students' performance (Al-Madani, 2015; Kazakoff, Macaruso, & Hook, 2018; Macaruso, Marshall, & Hurwitz, 2019; Schechter, Macaruso, Kazakoff, & Brooke, 2015; Shannon et al., 2015a; Wilkes, Macaruso, Kazakoff, & Albert, 2016; Yaghmour, 2016), limited studies have examined teacher perspectives of blended learning implementation, except when embedded in quantitative methodologies (Aidinopoulou & Sampson, 2017; Prouty & Werth, 2015; Ramadan, 2017; Rieckhoff, Owens, & Kraber, 2018; Truitt & Ku, 2018; Varier et al., 2017). In terms of participant populations, much research has been conducted on the implementation of blended learning with reading (Kazakoff et al., 2018; Schechter et al., 2015; Wilkes et al., 2016) and mathematics (Arifin & Herman, 2017; Hwang & Lai, 2017; Lai & Hwang, 2016; Truitt & Ku, 2018; Yaghmour, 2016) in the K-5 classroom, but little to no studies have specifically investigated the perspectives of K-5 teachers while implementing blended learning (Varier et al., 2017), particularly on the

professional development needs for implementing the model. With this in mind, this study extends what was known about the implementation of blended learning by elementary teachers. Furthermore, no research studies in the K-5 range on blended learning used Kolb's (1984) experiential learning theory or Magana's (2017) T3 framework. Additionally, no research studies had looked at the perspectives of elementary teachers, at any grade level, using virtual coaching as a support for blended learning implementation. This study adds understanding to the gap by having explored elementary teachers' perspectives while implementing blended learning with support from a virtual coach.

Themes emerging from the examination of literature on technology use in the elementary classroom include factors that influence elementary teacher technology use and use of technology for blended learning in K-5 classrooms. When research from the themes is considered, technology use in the elementary classroom can support opportunities for individualized and personalized instruction (Firdaus et al., 2018; Prescott, Bundschuh, Kazakoff, & Macaruso, 2018), while increasing the academic performance (Hwang & Lai, 2017), engagement, and interest levels (Chen, Huang, & Chou, 2017; Truitt & Ku, 2018; Varier et al., 2017) of students participating in a technology-enabled classroom. However, in order to implement technology in the classroom teachers have to overcome many obstacles, including time needed for the planning and implementation of technology integrated lessons (Spiteri & Rundgren, 2017; Vrasidas, 2015), access to reliable technology resources and devices (Lim, 2015; Nikolopoulou & Gialamas, 2015; Varier et al., 2017) and their own confidence levels and

beliefs about technology use in the classroom (Darling-Aduana & Heinrich, 2018; Ruggiero & Mong, 2015). Although much research has been conducted on the perspectives of teachers about factors negatively impacting technology integration, limited studies have delved into the positive factors impacting technology use in the elementary classroom (Hlásná, Klímová, & Poulová, 2017; Shelton & Parlin, 2016), including studies focused on professional development that positively impacts technology integration (Coleman, Gibson, Cotten, Howell-Moroney, & Stringer, 2016; Hlásná et al., 2017). The literature review confirmed that, in order to better understand teacher perspectives of their technology use, a qualitative approach was appropriate. Other teacher perspective studies used case study (Hlásná et al., 2017; Ramadan, 2017; Thibaut, Curwood, Carvalho, & Simpson, 2015); all using interviews as a primary data source, which helped to justify the basic qualitative design for this study. Additionally, this study extends what is known about elementary teacher technology use, specifically related to blended instruction with young learners, because no research studies on technology use in the elementary classroom used Kolb's (1984) experiential learning theory or Magana's (2017) T3 framework. This study provides new information on elementary teachers' technology use while filling a gap in perspectives based on teacher participation in virtual coaching while implementing blended learning.

Problem Statement

The problem related to this study was that the usefulness of individualized virtual coaching as a differentiated professional development support for elementary teachers implementing blended learning is not well understood. Current education research

indicates that this problem was justified and timely. Blended learning, across grade levels and disciplines, is a growing pedagogical practice in the field of education. As of 2017, an estimated 9 million students in the United States were engaging in a form of blended learning (Greene & Hale, 2017). Although millions of students are engaging in blended learning and teachers are being asked to shift their instruction, teachers are often not provided the differentiated support they need to transition from face-to-face instruction to blended instruction (Jonker et al., 2018; Margolis, Porter, & Pitterle, 2017; Porter, Graham, Bodily, & Sandberg, 2016). According to Greene and Hale (2017), "facilitating blended learning requires a teacher to understand and apply strategies and methodologies that are far more multifaceted than simply learning new content or finding new resources" (p. 140). In a case study conducted by Frazier and Trekles (2018), data showed the most challenging aspects of implementing an innovation are the lack of timely and ongoing job-embedded professional development opportunities led by experts for elementary teachers. However, elementary teachers' concerns with implementing an innovation can be decreased with tailored support and intervention (Dailey & Robinson, 2016) and may benefit from personalized and sustained teacher training from veteran teachers when implementing blended learning (Lewis & Garret Dikkers, 2016; Liao, Ottenbreit-Leftwich, Karlin, Glazewski, & Brush, 2017). Recently, K-12 school districts have been trying a new form of job-embedded professional development focused on individualized virtual coaching. Virtual coaching represents a coaching relationship between two individuals which is exclusively conducted through digital technologies (Hultgren, Palmer, & O'Riordan, 2016). After an empirical review of the literature,

qualitative research was needed to explore professional development through web-based virtual coaching, to gather teacher perspectives on participating in virtual coaching while implementing blended learning, and on professional development needs for implementing blended learning. Research focused on building an understanding of teachers' perspectives on participation in virtual coaching while implementing may inform education stakeholders on whether this innovation can provide quality differentiated professional development for educators.

Based on current research, the problem in the study was relevant and meaningful to the field of education. As the use of blended learning as a means to personalize instruction continues to grow in classrooms across the United States, it is becoming increasingly important to provide differentiated professional development and tailored support to educators for blended learning (Greene & Hale, 2017). One component of implementing blended learning in the classroom is the use of technology by teachers and students. In a study with primary school teachers, when technology use was combined with ongoing technology training teachers used technology in their classrooms at increased rates (Hlásná et al., 2017). Although teachers shared positive perspectives about training on technology integration, teachers do not always receive the training they need to successfully use technology in their classrooms. Elementary teachers felt challenged implementing technology due to a lack of differentiated professional development (Darling-Aduana & Heinrich, 2018; Vrasidas, 2015), technology support, and by the increased time outside of school they spent learning and navigating new technology devices (Prouty & Werth, 2015). Although much research had been done on

teachers' perspectives on integrating technology into the classroom, little to no research had addressed the usefulness of individualized professional development, like virtual coaching, to support components like technology integration for blended learning. Current literature regarding virtual coaching looked at BIE coaching within early childhood classrooms (Ottley, 2016) and teacher preparation programs (Regan & Weiss, 2020; Wake, Dailey, Cotabish, & Benson, 2017), video-based coaching with elementary (Suhrheinrich & Chan, 2017), early childhood preservice teachers (Kennedy & Lees, 2016), and secondary level educators where the class and teacher are recorded in a lesson and given delayed feedback (Gregory et al., 2017), and teachers' perceptions of e-coaching models in higher education (Ermeling, Tatsui, & Young, 2015; Wake et al., 2017). Although current studies examined virtual coaching in different forms across learning levels, there was a gap in research literature with regards to studies on virtual coaching as a differentiated support for elementary teachers implementing blended learning. Research providing relevant information for administrators to better support elementary teachers with blended learning implementation through alternative professional development opportunities may lead to teachers perceiving professional development as personalized and tailored to their professional needs.

The study is significant to the disciplines of virtual coaching and blended learning in the K-5 setting. As shown in the literature there was a need for differentiated and tailored support for elementary teachers implementing blended learning. Literature has also shown virtual coaching, in multiple forms, as beneficial for supporting elementary teachers with building targeted instructional practices (Coogle, Ottley, Rahn, & Storie,

2018; Scheeler, Morano, & Lee, 2018). However, a gap existed connecting the two disciplines. Little to no studies had looked at the usefulness of individualized virtual coaching for blended learning implementation. By expanding what was understood about professional development for blended learning, this study provides education stakeholders currently implementing or considering blended learning as a method of instruction with the information they need to provide elementary teachers with targeted, individualized professional development.

Purpose of the Study

The purpose of this basic qualitative study was to explore the perspectives of elementary teachers on the usefulness of individualized virtual coaching in supporting their blended learning implementation. To fulfill this purpose, I explored research questions focused on understanding the perspectives of elementary teachers on the usefulness of individualized virtual coaching to support their blended learning implementation and how the level at which teachers use technology influenced their perspectives of virtual coaching. Expanding upon the use of virtual coaching for differentiated professional development helped determine if and how virtual coaching supports the blended learning implementation process, and whether this innovation provides quality differentiated professional development for educators.

Research Questions

To address the problem and purpose of this study, I used the following research questions (RQs) to guide the study.

RQ #1: What are elementary teacher perspectives on the usefulness of individualized virtual coaching to support their blended learning implementation?

RQ #2: How does the level at which teachers use technology influence the perspectives of the virtual coaching support during blended learning implementation?

Conceptual Framework

The concept explored in this study was the perspectives of elementary teachers on the usefulness of individualized virtual coaching in supporting their blended learning implementation. The conceptual framework that informed this study included two elements. The first was Kolb's (1984) experiential learning theory. Kolb's experiential learning theory draws from multiple experiential learning theories, including the work of John Dewey, Kurt Lewin, and Jean Piaget, and is based in research from the fields of philosophy, physiology, and psychology (p. 17). Kolb posits in the experiential learning theory that learning happens in four distinct segments: (a) concrete experiences, (b) reflections, (c) abstract conceptualization, and (d) active experimentation (p. 68). Figure 1 shows the four segments of the learning theory.

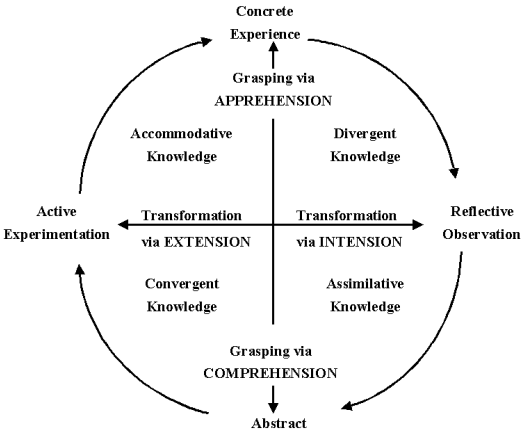

Figure 1. Structural dimensions underlying the process of experiential learning and the resulting basic knowledge forms. Reprinted from "Experiential Learning: Experience as the Source of Learning and Development," by D. A. Kolb, 1984, Englewood Cliffs, NJ: Prentice-Hall, p. 42. Reprinted with permission of Pearson Education, Inc.

Kolb's (1984) experiential learning theory was developed as an adaption of previous experiential learning theories, posing a three dimensional mode of learning instead of a learning continuum (p. 40). As shown in Figure 1, Kolb's experiential learning theory represents the learning process by four adaptable modes that are determined through the grasping of and transformation of knowledge by the learner (Kolb, 1984, pp. 41-42). This experiential learning theory was a good fit for exploring the perspectives of elementary teachers because it had been widely used in adult professional development and gave a categorical lens to the perspectives shared by elementary teachers implementing blended learning. In Chapter 2, I provide more details on the use of Kolb's experiential learning theory in this research study.

The four modes of Kolb's (1984) experiential learning theory were used in the development of the interview questions in order to help build an understanding of where the participants fit in the adult learning cycle. Additionally, the four modes were used

during the data analysis phase of the study using a priori codebook developed with the theory in mind. I analyzed the transcripts from the interviews of elementary teachers using a priori coding to determine where their perspectives fell in the adult learning cycle, and to identify themes and emerging discrepant data. This data were used to analyze elementary teachers' perspectives on the usefulness of individualized virtual coaching to support their blended learning implementation, in order to answer RQ 1.

The second element of the conceptual framework to ground the study was the T3 framework (Magana, 2017). Magana designed the T3 framework to synthesize and extend the TPACK model by focusing specifically on technology use and the value of technology in the adoption of innovative teaching and learning practices. In the T3 framework, Magana suggested three domains of technology use in education, (a) translational, (b) transformational, and (c) transcendent. Figure 2 shows the educational technology innovation continuum from translational to transcendent.

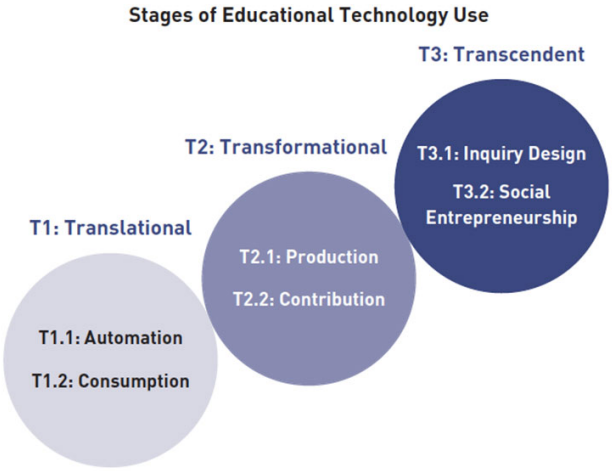

Figure 2. Stages of educational technology use. Republished with permission of Corwin Press from "Disruptive Classroom Technologies: A Framework for Innovation in Education," by S. Magana, 2017, Thousand Oaks, CA: Sage, p. 21. Permission conveyed through Copyright Clearance Center, Inc.

The development of Magana's (2017) T3 framework is informed by the research of Hattie (2009), Haystead (2009, 2010), and Marzano (In Magana & Marzano, 2014), and research empirically collected on innovation in education and technology use and adoption (A. Magana, personal communication, September 11, 2018). The T3 framework represents stages of educational technology use within three domains, where each domain has a different level of added value for technology use in education. The framework serves as a method to support educators in choosing technology tools and integration techniques to improve the learning experiences of students (Magana, 2017). The T3 framework served as an innovative lens for examining teacher implementation of technology in blended learning environments. In Chapter 2, I share how the T3 framework provided a support lens during the study as well as detailed description of the constructions within the three domains of the T3 framework of educational technology use.

In this basic qualitative study, the T3 framework supported the research design and the analysis of data collected during the research study. In the research design, the framework served as a way to categorize elementary teachers into educational technology use stages in order to identify common experiences, and to design interview questions to verify these categorizations. The T3 framework was used during the data analysis phase to determine where the technology practices of elementary teachers fell within the three domains, and to answer RQ2.

Nature of the Study

A qualitative paradigm was used for this proposed study focused on elementary teachers' perspectives implementing blended learning while participating in virtual coaching. According to Merriam and Tisdell (2016), basic qualitative research supports researchers in examining how individuals interpret their experiences and the meaning connected to those experiences. In the case of virtual coaching, elementary teachers engaged in a one-on-one conversation with their virtual coach and experience coaching through an individual lens. With this structure in mind, basic qualitative research allowed for data to solely be collected via individual interviews which mirrors and provides similar conditions as virtual coaching sessions (Merriam & Tisdell, 2016; Percy, Kostere, & Kostere, 2015). Additionally, interviews provided the researchers with non-observable perspectives about a specific phenomenon through a human's story which they would normally not be able to capture on their own (Jacob & Furgerson, 2012; Merriam & Tisdell, 2016). The use of individual interviews aligned with the purpose of the study which was to explore the perspectives of elementary teachers on the usefulness of individualized virtual coaching in supporting their blended learning implementation.

Participants for this study included elementary teachers who taught kindergarten through fifth grade in a public or private school in the United States and had received at least one year of virtual coaching while implementing blended learning. Purposeful sampling was used to capture information-rich cases, like virtual coaching, to identify participants whose perspectives aligned to the purpose of the study and the RQs being examined by the study (see Merriam & Tisdell, 2016; Patton, 2015; "Purposeful

Sampling," 2013). The target sample size for participation in this study, based on Guest, Bunce, and Johnson's (2006) qualitative study, was between nine and twelve K-5 teachers. Data was collected during individual semistructured 30 to 45 minute interviews. I conducted these interviews virtually via the web conferencing tool Zoom, which was only used to capture audio. I coded the audio transcribed interviews at the first level using a priori codes, which are codes established based on experience or from understanding the phenomenon (Saldaña, 2015). For this study, the pre-determined codes were established using two frameworks, Kolb's (1984) experiential learning theory and Magana's (2017) T3 framework. Appendix A shows Kolb's experiential learning theory codebook. Appendix B shows Magana's T3 framework codebook. In my second level of coding, I focused on identifying emerging codes, those codes focused on finding patterns and themes from the data (Saldaña, 2015). During the coding process, I used Microsoft Office Word to organize my transcriptions and Dedoose to help me make sense of the data I collected.

Definitions

Blended learning: A method of instruction by which teachers build a collection of innovative strategies aligned to a new mode of teaching and learning (Jonker et al., 2018) where they leverage digital technology and face-to-face instruction to facilitate student learning while allowing students to have a level of control over their pace and learning pathway (Staker & Horn, 2012).

Bug-in-ear (BIE) coaching: A method of instructional coaching focused on discrete, immediate feedback or instruction given via a wirelessly transmitted one-way

ear piece by a colleague or supervisor observing the implementation of targeted strategies or practices in a given setting (Coogle et al., 2018; Ottley & Hanline, 2014; Rock et al., 2014; Scheeler et al., 2018).

Video-based coaching: A method of instructional coaching where teachers, coaches, or instructors record video-based evidence of preservice or inservice teachers and use the digital evidence to encourage the teacher to reflect individually, with peers (Kennedy & Lees, 2016) or with the guidance from a coach or instructor to improve the teachers' practice (Allen, Hafen, Gregory, Mikami, & Pianta, 2015; Bradley et al., 2013; Knight, Hock, Skrtic, Bradley, & Knight, 2018; Rickels, 2016). Video-based coaching may include synchronous debriefing sessions or teachers receiving feedback asynchronously via annotations, comments, or voice overs from their coach or instructor (Allen et al., 2015; Rickels, 2016; Suhrheinrich & Chan, 2017).

Virtual coaching: A method of instructional coaching focused on digitally connecting coaching participants with their coaches to grow the skills and knowledge of coaching participants through virtual feedback and discussion (Barton et al., 2013; Barton et al., 2018; Carmouche et al., 2018; Nugent et al., 2017). Also referred to as *distance-based coaching*, *webcam coaching*, and *web-based coaching*.

Web-based coaching: A method of instructional coaching focused on digitally connecting coaching participants with their coaches to grow the skills and knowledge of coaching participants through virtual feedback and discussion (Barton et al., 2013; Barton et al., 2018; Carmouche et al., 2018; Nugent et al., 2017). Also referred to as *distance-based coaching*, *webcam coaching*, and *virtual coaching*.

Assumptions

This study was based on several assumptions. First, I assumed the interview questions I used in the study appropriately assessed the perspectives of the elementary teachers and captured the experiences defined by the purpose of the study. I carefully crafted the interview questions based on my conceptual frameworks, literature, and my understandings of the phenomenon. Second, I assumed all participants of the study were open and honest with their responses to the interview questions. Although I assured participants their identities would be kept confidential, participants may have felt the need to exaggerate their answers as to not reflect poorly on themselves or their coach. Lastly, I assumed participants engaging in year-long virtual coaching experienced similar coaching styles. As participants were working with an individually assigned coach, participants may have experienced slightly different coaching styles compared to other participants when engaging in virtual coaching for blended learning implementation.

Scope and Delimitations

The scope of this study was based on certain study boundaries. The purpose of the study, which was to explore the perspectives of elementary teachers on the usefulness of individualized virtual coaching in supporting their blended learning implementation, was one of the boundaries. The empirical literature on virtual coaching and blended learning defined the participant demographics, as the gap in the literature pointed to the capturing of perspectives on differentiated professional development for K-5 teachers. I did not include 6th grade to college as much research, particularly in higher education, had been conducted with practitioners supporting these grade levels with blended learning (Jonker

et al., 2018). Within the boundaries of the purpose of the study, a basic qualitative research design was chosen as the methodology as the literature pointed to a gap in the description of perspectives by teachers implementing blended learning, particularly through the lens of professional development.

The delimitations of this study included the selection of participants for this study based on inclusion criteria. First, the study was limited to teachers teaching K-5 grade levels during the coaching year. I only explored the perspectives of teachers from one virtual coaching company. I did not control for other factors, like those K-5 teachers who received virtual coaching for blended learning through other means but are not included in this study. Second, I limited invitations to participants who taught these grade levels in a public or private school in the United States during the coaching year. I did not send invitations to K-5 educators who participated in virtual coaching for blended learning who were outside of the United States, as to capture data from one nation's educational system. Third, based on the purpose of my study, I controlled for K-5 teachers who participated in year-long coaching for blended learning implementation. I did not control for other factors, such as years of teaching, geographic location in the United States, or other areas of coaching support the participant may have received during the year. My decision to limit the focus on blended learning was based on literature related to teachers' need for differentiated professional development with technology use and at the elementary level. The use of the inclusion criteria and purposeful sampling, supported the transferability of the study with detailed and rich descriptions of the participants (i.e.,

grade level taught) and their settings (i.e., public or private school; Merriam & Tisdell, 2016) which can be used by other researchers to build out their own studies.

Limitations

The research design of a study often creates limitations. As a basic qualitative research approach was used in this study, one limitation was my perspectives and biases as a researcher (see Merriam & Tisdell, 2016). In Chapter 3, I describe how I increased the trustworthiness of the study by being transparent about the research findings, the recruitment process and the demographics and settings of the participants, and clearly stated personal and professional connections to the research study. In addition, to manage my bias in this study I conducted member checks (Carlson, 2010), did researcher reflective journaling (Slevin & Sines, 2000), and provided transcripts for review by participants. A second limitation of the study was the amount of time that had passed since coaching concluded. By the time this study was conducted, participants had completed their one-year of virtual coaching for blended learning implementation four months prior. This time gap might have impacted the clearness of participant's memories (Merriam & Tisdell, 2016). A third limitation of the study was the use of virtual interviews to capture the perspectives of elementary teachers. Conducting interviews virtually could potentially affect data analysis as it may be difficult to capture the participant's full descriptive experience (Merriam & Tisdell, 2016). The last limitation was the transferability of the findings gathered through this study as I was looking at a very specific virtual coaching program; making it difficult to generalize the results of the study.

Significance

This study is significant as it may provide contributions to advance knowledge of innovative practices, like virtual coaching, to support blended learning implementation in K-5 classrooms. As documented in higher-education, there is a growing need for differentiated support for blended learning implementation (Jonker et al., 2018; Margolis et al., 2017). However, little is known about the professional needs of K-12 educators, particularly K-5 teachers, when it comes to implementing blended learning. This study fills a gap in the literature by sharing insights from elementary educators receiving support for blended learning implementation and advises learning leaders on the adoption of innovative alternative forms of professional development as best practice in supporting the execution of blended learning. In relation to potential positive social change, learning leaders may use data from this study to further access to blended learning experts; potentially positively impacting K-5 teachers and students through access to expert professional support.

In relation to improving practice, this study may inform the use of information technology and staff development in teacher education. Educational stakeholders, including district officials, administrators, preservice teacher instructors, and instructional coaches, may use results from this study as a means to examine whether virtual coaching for differentiated professional development for teachers implementing blended learning in the classroom meets their needs. Additionally, this study fills a gap in the literature by providing administrators with insights into how well virtual coaching may function as an innovative replacement for face-to-face or internal coaching to support elementary

teachers in implementing blended learning. In relation to potential positive social change, administrators may be able to maximize resources while giving their K-5 educators a convenient and flexible means to access expert knowledge for blended learning implementation.

Summary

In Chapter 1, I introduced my qualitative study by describing virtual coaching and blended learning, sharing the population, which was examined in this study, and described why the study needed to be conducted. In the background section, I summarized the research literature and identified the gaps in knowledge for virtual coaching and blended learning professional development. My problem statement and purpose of the study provided evidence of the relevancy and significance of the phenomenon of interest. The questions outlined in the RQ section framed the boundaries of the study by examining the research data through two conceptual frameworks, Kolb's (1984) experiential learning theory and Magana's (2017) T3 framework. In the nature of study section, I provided rationale for the selection of the basic qualitative research design, described the phenomenon being investigated, and summarized my approach to data collection and analysis for this study. To clarify language used in the study, the definitions section contains concise definitions of key concepts used throughout the study. Boundaries of the study were clarified in the assumptions, scope and delimitations, and limitations sections. Lastly, in the significance section, I identified potential contributions of the study in advancing knowledge and practice in innovation and expounded upon potential implications for positive social change from this study.

In Chapter 2, I describe the literature search strategies I used in the study, review the conceptual frameworks used in the study, and provide an exhaustive review of current literature related to virtual coaching in education, implementation of blended learning in elementary classrooms, and technology use in elementary classrooms.

Chapter 2: Literature Review

Introduction

The problem related to this study was that the usefulness of individualized virtual coaching as a differentiated professional development support for elementary teachers implementing blended learning is not well understood. The purpose of this basic qualitative study was to explore the perspectives of elementary teachers on the usefulness of individualized virtual coaching in supporting their blended learning implementation. Current literature establishes the benefits of blended learning on the academic performance, self-efficacy, engagement, and interests of students (Firdaus et al., 2018; Hui et al., 2018; Lai & Hwang, 2016). There are studies which have helped establish the challenges teachers faced with implementing technology-enabled instruction when technology and instructional supports were lacking (Prouty & Werth, 2015; Spiteri & Rundgren, 2017; Vrasidas, 2015). Although the benefits of virtual coaching on instruction have been found in multiple forms, including BIE coaching, video-based coaching, and web-based coaching, current literature has not explored the impacts of virtual coaching on blended learning implementation. The goal of this research study was to gain an understanding of the perspectives of elementary teachers who are participating in bi-weekly virtual coaching over the course of a year, and how virtual coaching impacts the implementation of blended learning. The information gathered from this research study may help increase awareness of teacher perspectives on innovative professional development options for educators implementing models of instruction, like blended learning.

Chapter 2 begins with a review of my literature search strategy and an overview of the conceptual frameworks for this study, Kolb's (1984) experiential learning theory and Magana's (2017) T3 Framework. In the literature section, I provide an overview of the types of virtual coaching, one of which is the focus of this research study. Next, I review the types of professional development conducted through virtual coaching and the perspectives of teachers who are participating in several types of virtual coaching. In the next section, I present the successes and challenges with blended learning implementation in the K-5 classroom, while focusing on academic and 21st century skills, like self-efficacy. Finally, I review the factors influencing elementary teacher technology use in the classroom and how technology is used for blended learning in K-5 classrooms.

Literature Search Strategy

The literature review for the perspectives of elementary teachers implementing blended learning while participating in virtual coaching used scholarly sources from published reports and peer-reviewed journal articles. The scholarly publications were accessed the databases ACM Digital Library, Directory of Open Access Journals, EBSCOhost, Education Source, ERIC, Google Scholar, SAGE Journals, The Learning and Technology Library, Taylor and Francis Online, and Teacher Reference Center. The search terms used to explore articles published within the last five years about the topic of study included *blended learning, bug-in-ear, computer technology integration, digital coaching, digital tools, digital tools in the classroom, distance-based instructional coaching, distance coaching, e-coaching, elementary teachers, email coaching, factors that influence elementary teacher technology use, flex model, flipped learning, hybrid*

learning, individual rotation, individualized professional development, K-5, K-12, lab rotation, mobile devices, online coaching, personalized professional development, primary teachers, self-blend, station rotation, swivl and coaching, teacher perceptions of virtual coaching, technology implementation, technology integration, technology use, tele-coaching, telephone coaching, text-based coaching, video-based coaching, virtual coaching, web-based coaching, and *webcam coaching.* After examining the articles in each search, articles pertinent to the study were saved and categorized in four locations, the Walden Library, in a literature review matrix, in a folder on a computer desktop, and printed and placed in a binder. The literature review matrix was used for further categorization based on methodology, research findings, and relevancy to level two headings. The reference section of each of the articles was used to find additional publications for this study. The determination that saturation had been met occurred with recurring themes in the literature and the appearance of the same author names in the publications.

Conceptual Framework

The concept explored in this study was the perspectives of elementary teachers on the usefulness of individualized virtual coaching in supporting their blended learning implementation. The conceptual framework grounding this study included Kolb's (1984) experiential learning theory and Magana's (2017) T3 framework. These conceptual frameworks served as an innovative lens to capture the perspectives of elementary teachers as they experienced the implementation of blended learning with support from a virtual coach.

Kolb's Experiential Learning Theory

Kolb's (1984) experiential learning theory draws from the experiential learning theories of John Dewey, Kurt Lewin, and Jean Piaget, whose contribution to experiential learning stem from multiple themes (Kolb, 1984). As the basis of their experiential learning theories, Lewin and Dewey's educational philosophies concentrate on democratic values, including cooperative leadership, dialogue, and scientific humanism, and pragmatism, with a focus on life-long learning from experience (Kolb, 1984). Piaget's contributions include his work on learning from experiences, and the link between learning and knowledge (Kolb, 1984). With these theories as the foundation of experiential learning, Kolb's posits in his experiential learning theory that learning happens in four distinct segments: (a) concrete experiences, (b) reflections, (c) abstract conceptualization, and (d) active experimentation (p. 68). Figure 3 shows the four segments of the learning theory.

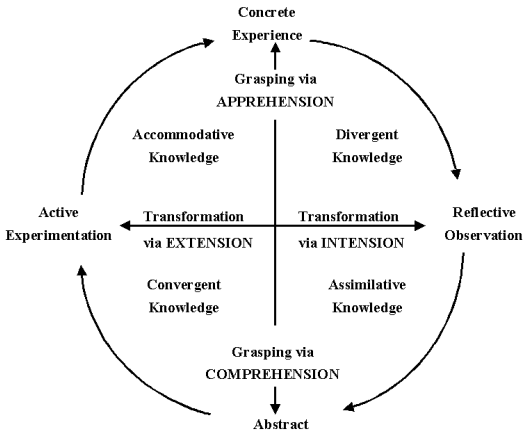

Figure 3. Structural Dimensions Underlying the Process of Experiential Learning and the Resulting Basic Knowledge Forms. Adapted from "Experiential Learning: Experience as a Source of Learning and Development" By D. A. Kolb, 1984, Englewood Cliffs, NJ: Prentice-Hall, p. 42. Reprinted with permission.

Kolb's (1984) experiential learning theory was developed as an adaption of previous experiential learning theories. The theory represents the learning process in four adaptable modes determined through the grasping of and transformation of knowledge by the learner (Kolb, 1984, pp. 41-42). These four modes of cognitive processing are represented via a learning cycle, as shown in Figure 4.

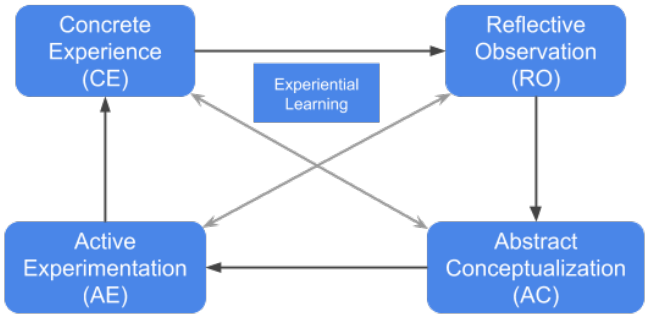

Figure 4. Kolb's Learning Cycle. Adapted from "Experiential Learning: Experience as the Source of Learning and Development," by D. A. Kolb, 1984, Englewood Cliffs, NJ: Prentice-Hall, p. 42. Reprinted with permission.

In Kolb's experiential learning cycle, the four adaptable modes are defined as follows

- concrete experience (CE) where the learner engages in a new or existing experience;
- reflective observation (RO) where the learner assesses for gaps between what they experienced and what they understand;
- abstract conceptualization (AC) where the learner reflects to form new ideas or to re-examine existing understanding; and
- active experimentation (AE) where the learner applies new understanding to future experiences.

According to Kolb (1984), in this continuous learning cycle, an adult learner engages in an action (CE) and seeks to make connections to outside conditions through observation and reflection (RO). The learner then analyzes whether the knowledge gained by the experience corresponds to what was experienced and draws a conclusion (AC). The knowledge gained from this experience is then used by the learner when interacting with new or pre-existing experiences (AE). Due to the continuity of the cycle, the learner engages in all or parts of these cognitive phases while learning; however, Kolb shared in his theory that the learner must fully engage in each of the four modes in a sequential order before true learning can take place.

Application of Kolb's experiential learning theory in previous research.

Perspectives of elementary teachers on the usefulness of individualized virtual coaching in supporting their blended learning implementation is attuned with Kolb's (1984) experiential learning theory. The virtual coaching structure, whether supporting the

implementation of blended learning or other pedagogical innovations, embodies the continuous learning cycle proposed by Kolb for adult learners. In previous research, Kolb's experiential learning theory has been widely used as a lens for adult learning in the nursing field, including mentorship to support novice practitioners. Cooley and De Gagne (2016) applied Kolb's experiential learning theory to a study looking at the support gaps for nurses becoming nursing educators. The researchers found that new nursing educators need ongoing mentor support to overcome the knowledge gap while transitioning from nurse to educator, and that the application of the new knowledge should be embedded in experience (Cooley & De Gagne, 2016; Kolb, 1984). Kolb's experiential learning theory has also been applied to mentorship of trainee music teachers. While conducting a case study, Cain (2007) found mentorship to be successful when the mentor intentionally provides opportunities for the trainee music teachers to engage in all four modes of the learning cycle instead of exclusively in the mentors' or trainees' area of preference (Kolb, 1984). Furthermore, Turesky and Gallagher (2011) wrote an article on the benefits of coaching for leadership while using Kolb's experiential learning theory, and suggest leadership coaches adapt their learning preference to meet the needs of their clients. Additionally, Stirling (2013) shares how utilizing Kolb's experiential learning theory may address coach education gaps and improve the effectiveness of professional coaches through the focus on experience and reflection (Kolb, 1984). Collectively, these studies provided a precedent for the use of Kolb's experiential learning theory in exploring the perspectives of elementary teachers as it had been widely used in adult professional development, and gave a categorical lens to the

perspectives shared by elementary teachers implementing blended learning with support from a virtual coach.

Benefits of Kolb's experiential learning theory. Kolb's (1984) experiential learning theory benefits this study as it gives a categorical lens to the perspectives shared by elementary teachers implementing blended learning while participating in virtual coaching. This lens was used during the data analysis phase of the study with a focus on determining where the perspectives of elementary teachers implementing blended learning fall in the adult learning cycle. Kolb's experiential learning theory was also used during data analysis to identify the themes in the interview data, to identify how the perspectives of elementary teachers changed with their level of engagement in Kolb's four adaptable modes, and made visible any discrepant data which emerged from the study. Additionally, this data was used to analyze the perspectives of elementary teachers on the usefulness of individualized virtual coaching to support their blended learning implementation in order to answer RQ 1. Furthermore, by using the learning cycle as a lens, Kolb's experiential learning theory captured an understanding of how experience and knowledge inform the transition of an elementary teacher's current instructional practices to more innovative practices, like blended learning (Kolb, 1984).

Magana's T3 Framework

The development of Magana's (2017) T3 framework was informed by the research of Hattie (2009), Haystead (2009, 2010), and Marzano (2014), and research empirically collected on innovation in education and technology use and adoption (A. Magana, personal communication, September 11, 2018). Hattie's (2009) meta-analysis,

which focuses on student achievement, surfaced the importance of making student feedback visible to teachers to improve the effectiveness of instruction for the students. Additionally, Hattie's research raised the importance of goal development in increasing (32-percentage points) the achievement of students. Haystead (2009, 2010) and Marzano contributions include their work on intrinsic and mastery-based goals, visualizing the growth process, and increasing the ownership of students through strategies focused on self-reflection and self-monitoring (Magana, 2017). Collectively, the research presented by Hattie, Haystead, and Marzano drives the foundational importance of ownership and student-driven learning with technological supports in Magana's T3 framework.

Magana (2017) designed the T3 framework to synthesize and extend Mishra and Koehler's (2006) Technology, Pedagogy, and Content Knowledge (TPACK) model by focusing specifically on technology use and the value of technology in the adoption of innovative teaching and learning practices. In the T3 framework, Magana suggested three domains of technology use in education, (a) translational, (b) transformational, and (c) transcendent. Figure 5 shows the educational technology innovation continuum from translational to transcendent.

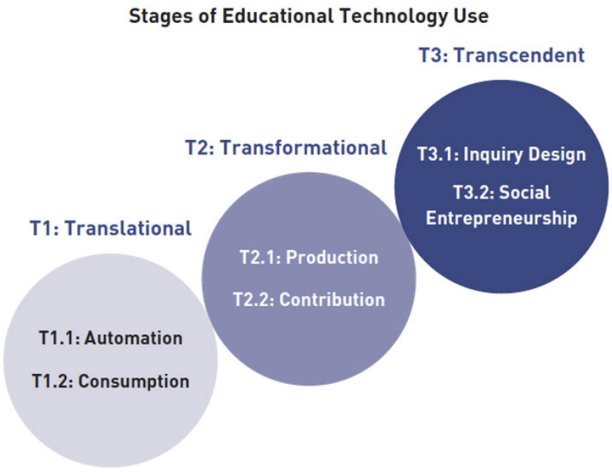

Figure 5. Stages of educational technology use. Republished with permission of Corwin Press from "Disruptive Classroom Technologies: A Framework for Innovation in Education," by S. Magana, 2017, Thousand Oaks, CA: Sage, p. 21. Permission conveyed through Copyright Clearance Center, Inc.

In Magana's (2017) T3 framework, the three stages of educational technology use are defined as

- translational (T1) where technology integration provides the lowest level of value, as educators use technology to do analog tasks digitally to automate the process (automation, T1.1) or consume information in a variety of ways (consumption, T1.2) (Magana, 2017, pp. 28-35);
- transformational (T2) where the integration of technology leads to a substantial change in the nature or impact of the task, or the role of the individual doing the task (Magana, 2017, p. 38). In the production (T2.1) phase of this stage, learners produce quality, authentic evidence to illustrate their growth in knowledge and their thinking processes (Magana, 2017, p. 42). In the contribution (T2.2) stage, learners apply all the qualities of the production phase while extending their knowledge to others (Magana, 2017, pp. 53-54); and

- transcendent (T3) where technology use goes beyond what is normally expected in education and focuses on students designing learning opportunities based on their passions and interests (inquiry design, T3.1), and social entrepreneurship (T3.2) where students solve problems and bring those solutions to life via technology in the real-world (Magana, 2017, pp. 63-77).

According to Magana (2017), the three stages of educational technology use have various levels of value. As the educational technology use moves from translational to transcendent the value-added level increases (Magana, 2017). For example, a learner engaging in a task in the automation phase of the T3 framework versus the production phase is experiencing a lower value-added use of educational technology. Furthermore, as the learner experiences higher value-added stages of the technology use, the level of ownership required by the learner increases and the role of the educator shifts to a facilitator of the learning process (Magana, 2017). The goal of the T3 framework is to make visible the continuum of educational technology use and to use the framework to analyze technology use in the classroom in hopes of encouraging innovative teaching and learning practices (Magana, 2017).

Application of Magana's T3 framework in previous research. Magana's (2017) T3 framework was aligned with the purpose of this research study which was to explore the perspectives of elementary teachers on the usefulness of individualized virtual coaching in supporting their blended learning implementation. Although the framework is not currently documented in education research, the TPACK framework it extends is based on five years of design experimentation and has been widely used in the

field of education as a conceptual lens for educational technology use and integration (Mishra & Koehler, 2006). Along with TPACK, another model which is often used when examining technology integration in education is the substitution, augmentation, modification, and redefinition (SAMR) model. Although the SAMR model is popular amongst researchers, it is not based in peer-reviewed research (Green, 2014) and because of its nature as a categorizing model (Marcovitz & Janiszewski, 2015), it provides an inadequate frame for designing innovative teaching and learning practices for the 21st century classroom (Magana, 2017). With the limitations of these educational technology conceptual lenses in mind, Magana's T3 framework provided an innovative lens for exploring the perspectives of elementary teachers implementing blended learning with support from a virtual coach.

Benefits of Magana's T3 framework. Magana's (2017) T3 framework benefitted this study because it served as an innovative lens for examining teacher implementation of technology in blended learning environments. The T3 framework fit the needs of this study as it provided a way to categorize elementary teachers into educational use stages in order to identify common perspectives and discrepant data emerging from interviews. The T3 framework was used during data analysis to determine where the technology practices of elementary teachers fell within the three stages of educational technology use. This framework was used to answer RQ 2. Additionally, I used the stages of educational technology use in Magana's T3 framework to gain a clearer understanding of the role of technology innovation in the implementation of blended learning by elementary teachers.

Virtual Coaching in Education

Virtual coaching in education focuses on the methodology of coaching in a digital setting while maximizing coaching practice and technology-enabled professional development, including BIE coaching, video-based coaching, and web-based coaching, for preservice and inservice education practitioners. In this section of the literature review, I review the types of virtual coaching (BIE, video-based coaching, and web-based coaching), including a synthesis of the definitions shared in empirical research. Next, I discuss impacts of professional development through virtual coaching, including the implementation of communication strategies through BIE coaching; the utilization of video-based coaching to support reflection, visual awareness of instructional and targeted teaching practices, and feedback; and impacts of web-based coaching including coaching feedback via email and text message, growth in teaching practice and student outcomes, teacher self-efficacy, benefits and challenges of web-based coaching for leadership, and the impacts of combining web-based coaching with media platforms. Lastly, I discuss teacher perspectives on virtual coaching, including specific examples from BIE coaching, video-based coaching, and web-based coaching on coaching support, feedback, convenience, and teachers' emotional responses to coaching.

Types of Virtual Coaching

Since the conception of virtual coaching, meaning at a distance coaching, several types of coaching have surfaced in the research; these include BIE coaching, video-based coaching, and web-based coaching. BIE is one type of virtual coaching used by early childhood to higher education teachers for professional development support. BIE

coaching is a method of instructional coaching focused on discrete, immediate feedback or instruction given via a wirelessly transmitted one-way ear piece by a colleague or supervisor observing the implementation of targeted strategies or practices in a given setting (Coogle et al., 2018; Ottley & Hanline, 2014; Rock et al., 2014; Scheeler et al., 2018). Prior to the implementation of BIE coaching via digital technologies in a 2009 study by Rock et al., BIE coaching relied on FM radio using wireless and wired transmissions of information (Rock et al., 2014). Now with the advancements of technology, BIE coaching has the capability of supporting individualized professional development for practitioners in a variety of settings and methodologies.

Video-based coaching, like BIE, is a versatile form of professional development used to support preservice and inservice practitioners of education. During video-based coaching, which includes many different models, teachers, coaches, or instructors record video-based evidence of the preservice or inservice teacher teaching and use the digital evidence to encourage the teacher to reflect individually, with peers (Kennedy & Lees, 2016) or with the guidance from a coach or instructor to improve the teachers' practice (Allen et al., 2015; Bradley et al., 2013; Knight et al., 2018; Rickels, 2016). Video-based coaching may include synchronous debriefing sessions or teachers receiving feedback asynchronously via annotations, comments, or voice overs from their coach or instructor, like Synchronized Video Feedback (SVF), a feedback model with overlaid graphical or auditory feedback on a teaching video. (Allen et al., 2015; Rickels, 2016; Suhrheinrich & Chan, 2017). During debriefing sessions, teachers and coaches or instructors collaboratively watch the collected video evidence (Bradley et al., 2013; Knight et al.,

2018), coaches or instructors facilitate reflective conversations (Baker et al., 2017) or teachers are given a set of criteria, like the Classroom Assessment Scoring System Observation Tool or the Survey of Teaching Effectiveness, to reflect on their teaching (Allen et al., 2015; Gregory et al., 2017; LoCasale-Crouch et al., 2016; Rickels, 2016; Shewell, 2014), and use these reflections to set goals, measure progress (Knight, 2014), and provide personalized support for the teacher (Kennedy & Lees, 2016). The use of video-based coaching, a technology innovation, has the potential to support individualized professional development for practitioners in the field of education.

Web-based coaching, often including components of face-to-face, BIE, video-based, and email and text message coaching, focuses on digitally connecting coaching participants with their coaches. Although many models of web-based coaching exist (also referred to as distance-based coaching, webcam coaching, and virtual coaching), a focus is on providing a cost-effective, easy to access flexible approach to coaching from experts in the field (Anthony et al., 2011; Carmouche et al., 2018; Lee et al., 2018; Leighton et al., 2018; Matsumura et al., 2016). Another focus is to grow skills and knowledge of coaching participants through virtual feedback and discussion (Barton et al., 2013; Barton et al., 2018; Carmouche et al., 2018; Nugent et al., 2017). During web-based coaching sessions, participants are supported in similar ways as face-to-face coaching, including classroom observations, support before implementing a lesson, and evidence-based reflections after lesson implementation (Lee et al., 2018; Powell & Diamond, 2013); however, this support is provided digitally. In addition, some web-based coaching models include access to hypermedia and digital communities on a web platform (Anthony et al.,

2011; Leighton et al., 2018; Wilczynski et al., 2017). Potentially, web-based coaching can be used to provide cost-effective, expert support for instruction across content and grade levels.

Professional Development Through Virtual Coaching

Virtual coaching is one form of professional development focused on supporting teachers in implementing a variety of pedagogical practices. Depending on the method of delivery, professional development through virtual coaching varies. The types of virtual coaching for professional development include BIE coaching, video-based coaching, and web-based coaching.

Bug-in-ear coaching. BIE coaching is the first type of virtual coaching used for teacher professional development. BIE coaching showed positive impacts on the implementation of communication strategies by early childhood teachers and with preschool students with support from a coach. In a study focused on using BIE coaching to determine the effects of evidence-based communication strategies on preschool students' communication skills, Storie et al. (2017) found preservice teachers' use of functional communication strategies, focused on social communication, positively impacted the children's use of communication strategies even after intervention via BIE coaching ended. Additionally, Ottley et al. (2018) through BIE coaching with four community-based coaches and 21 early childhood teachers reported a positive impact on the implementation of one type of communication strategy by teachers when supported by community-based coaches who had no prior coaching experience. Of particular interest in this study is that community-based coaches felt growth in their practice yet

were not confident in providing non-intrusive feedback and showed variability in feedback rates across strategies (Ottley et al., 2018). Although studies have been done on the impact of BIE coaching on the implementation of communication strategies with teachers, results of this research are limited beyond teachers' perspectives and with grade levels beyond early childhood education.

Video-based coaching. Video-based coaching is the second type of virtual coaching used for teacher professional development. During video-based coaching, coaches support teachers in a variety of ways to maximize the reflection process. In a mixed methods study focused on observing teachers through video-based evidence, Shewell (2014) found coaches (*N*=6) generally agreed that video is an effective means for teachers to reflect on their practice. Furthermore, coaches shared that for video-based reflection to be effective the process of gathering and reflecting on teaching practice had to become part of the teachers' routine and be an established part of the organization's culture (Shewell, 2014). With video-based reflection as their lens, coaches have tried a variety of ways to support teachers to engage in reflection. Data from several studies showed the productivity of coaching sessions increased when coaches and teachers engaged with the teaching video(s) prior to the meeting, especially when facilitative questioning (Shewell, 2014) and reflection protocols where teachers and coaches identify two strengths and two weaknesses in the videos were utilized (Bradley et al., 2013). Researchers also noticed a decrease in interest in collaborative viewing and reflecting on videos as the length of the coaching session increased (Bradley et al., 2013) and found that reflective conversations were maximized when the coach and teacher individually

watched the video-based evidence prior to attending the coaching session (Shewell, 2014). Shewell (2014) also reported benefits to having coaches make smaller clips of the teacher teaching and providing reflections prior to meeting with the teacher. Through the incorporation of virtual coaching in support of science professional development, Nugent et al. (2017) found the use of technology to be efficient, flexible, cost-effective, and beneficial for the teachers who self-reflected after watching video recordings. Together, when using video-based evidence, these studies shared reflection as an integral part of the coaching process.

As a form of multi-dimensional professional development, video-based coaching builds visual awareness of instructional practices. Baker et al. (2017) examined the use of video in a K-8 school and found using video provided a secondary eye on the classroom, meaning the capturing of teaching practice in an unfiltered way. Through the experiences of the teachers, Baker et al. found utilizing video technology provided teachers with an opportunity to view classroom instruction multiple times while exposing new things each time they viewed the video. In addition, videos of the instructional practices of teachers allowed coaches to collaboratively view and engage teachers in reflective practices while providing objective feedback (Baker et al., 2017; Bradley et al., 2013; Knight et al., 2018; Shewell, 2014). Although researchers have shared positives with video-based evidence, one challenge of video-based coaching is often teachers are apprehensive about collecting video (Shewell, 2014).

Video-based coaching has a positive impact on targeted teaching practices with preservice and inservice K-12 teachers when the Classroom Assessment Scoring System

(CLASS) is used. In three studies focused on video-based coaching, the CLASS was used to rate classroom quality. Statistically significant increases in four CLASS domains, including behavior management, productivity, quality of feedback, and language modeling were found with early childhood teachers engaging in video-based coaching (Zan & Donegan-Ritter, 2014). Similarly, Kennedy and Lees (2016), in early head start classrooms with preservice educators, found using video-based peer coaching on average resulted in a two-point increase on the CLASS domains. Along with positive impacts on preservice and inservice teachers, positive impacts have been shown for students too. In a study focused on the My Teaching Partner-Secondary coaching model using the CLASS secondary domains in classrooms, Allen et al. (2015) found students made gains from the 50th to 59th percentile in student achievement on state standards. The CLASS has shown positive impacts on teachers and students when used in conjunction with video-based coaching.

Like with the CLASS, other video-based coaching models have shown positive quantitative impacts on targeted teaching practices. With middle school teachers doing video-based coaching using the Classroom Observation Form, Knight et al. (2018) found collaboratively viewing video-based evidence resulted in teachers making an 11.2-point gain (80.1% to 91.3%) on student classroom engagement and an average gain of 44.3% on a teacher chosen instructional focus. Similarly, using the Mathematical Quality of Instruction (MQI) for administrative observations model, Blazar, Gilbert, Herlihy, and Gogolen (2018) found teachers scored higher on three MQI domains (Common Core Aligned Student Practices, Working with Students and Mathematics, and Richness of the

Mathematics) than the control group. With the above studies in mind, video-based coaching, as implemented using many models, has shown to have a positive impact on the practices of teachers when video-evidence and targeted support is used to support teachers to grow their practice. The use of video-based coaching for targeted instructional support was relevant to this study.

Peer, coach, and instructor feedback play a role in video-based coaching for preservice teachers. Rickels (2016) found a slight increase in preservice music teaching performance after receiving SVF according to the Survey of Teaching Effectiveness, a performance-based assessment of music teachers. Although the teaching performance of the treatment group was not statistically significant, three items related to SVF on the attitudes of preservice teachers toward feedback were found to be statistically significant, including feedback transparency, support for improving instruction, and the SVF model for feedback (Rickels, 2016). With these results in mind, feedback via the SVF model in this study was found to be socially valid; however, it does not factor in the instructional supports provided by individual classroom instructors between the pretest and posttest assessments. In a study focused on providing tiered supports to early childhood preservice teachers via captured video and weekly peer feedback, Kennedy and Lees (2016) found an increase in pretest and posttest scores of teachers using the CLASS (1-5 low and 5-7 high). Along with three weeks of seminars and classroom visits in addition to 60 hours of place-based learning, preservice teachers participated in weekly peer feedback where they watched and gave feedback on video captured during teaching (Kennedy & Lees, 2016). Kennedy and Lees (2016) found as participants engaged in the

peer feedback cycle their ability to provide rich, targeted feedback based on the video and their own experiences increased. Preservice teachers in this study found the peer feedback process to be supportive and having a positive influence on their teaching (Kennedy & Lees, 2016). In another study with two preservice teachers in one early childhood classroom, McLeod et al. (2018) examined the impacts of video-based coaching with email feedback on the implementation of a list of three targeted behaviors, emotional labeling, descriptive praise, and providing choices. Results from the study showed an increase in all three behaviors upon implementation of video-based coaching and the use of email to give targeted feedback (McLeod et al., 2018). During maintenance participants continued to exhibit the behaviors with greater fidelity than prior to the treatment (McLeod et al., 2018). Although these studies provide documented success of video-based coaching through targeted feedback, none of these studies focused on inservice K-5 teachers, but preservice or preschool teachers.

Web-based coaching. Web-based coaching is the third type of virtual coaching used for teacher professional development. Variability was found while examining email, text message, and telecoaching, types of web-based coaching, via performance-based feedback and the implementation of targeted instructional behaviors. Hemmeter et al. (2011), with four inservice preschool teachers who had low baseline implementations, found the combination of prior training and email coaching on descriptive praise (a focus on describing the positive behavior children display) increased participants' use of descriptive praise during instruction. Additionally, three of the four teachers in the study generalized descriptive praise in environments outside of the intervention phase setting,

large group activities (Hemmeter et al., 2011). Similarly, in three iterations of a study focused on using email feedback to support three self-selected targeted teaching behaviors, Barton et al. (2013) found the intervention increased participants (*N*=9) use of descriptive praise in the classroom. This same study showed the teaching behaviors *pre-corrections* and *providing choices* increased after the email coaching intervention (Barton et al., 2013). However, these results cannot be generalized due to variable intervention steps for the participants in this study. When preservice teachers received email performance-feedback on three self-selected strategies (i.e., descriptive praise, choice, emotional labeling, language expansions, and promoting social interactions), the teachers increased their use of the strategies (Barton, Fuller, & Schnitz, 2016). Furthermore, Barton et al. (2016) reported that two out of the three participants maintained their use of the strategies with a slight decrease after email coaching ended. Using text messages instead of email, Barton et al. (2018) reported similar findings with preservice preschool teachers when performance-based feedback was provided on self-selected targeted behaviors. Participants in this study were also found to have generalized the strategies in non-intervention based environments (Barton et al., 2018). In contrast, Artman-Meeker, Hemmeter, and Snyder (2014) found with Head Start teachers that the implementation of prior training and email coaching did not increase the use of Pyramid practices, a focus on the development of social-emotional and behavior management, in the classroom, but was statistically significant when it came to quality classroom interactions. Telecoaching, the use of telephone to engage in the coaching process, was also found to increase the fidelity of a behavior management program when targeted support by a telecoach was

provided at elementary schools (McDaniel & Bloomfield, 2020). Together, these studies show the impact of text message and email coaching on preservice and inservice early childhood educators implementing targeted strategies, and the impact of telecoaching on elementary teachers' implementation of a targeted behavior program. When examining text message and email coaching results, these results cannot be generalized to the elementary teaching population due to small sample sizes and the absence of data for the population which is important to this study. Likewise, the results of telecoaching are represented by one study and not transferrable to the early childhood education population or to urban or suburban settings.

Growth in practice was shown by early childhood and K-12 educators while participating in a combination of web-based virtual coaching and some other form of professional development, while student growth was variable. In a study focused on the combination of video-based and web-based coaching, Wilczynski et al. (2017) reported an increase in a preschool teacher's knowledge of autism spectrum disorder interventions, increased ability to implement the strategies with fidelity, and growth in compliance by the child upon intervention. Although the results of the virtual coaching are promising, the results cannot be generalized due to the small sample size. Two studies which looked at professional development paired with web conference coaching showed increases in targeted skills, including immediate gains by middle school special education teachers in decreasing disruptive and undesirable behaviors (Carmouche et al., 2018), and increases in inquiry instruction by science teachers (Lee et al., 2018). However, in both studies, measurable improvements by students were not shown, and the small sample sizes make

it difficult to generalize the studies' results. In a different model focused on reading instruction, Sailors and Price (2015) reported increased reading instruction opportunities given to students by teachers and gains in reading assessment scores, particularly with students labeled as below grade level. Additionally, researchers found a correlation between the amount of time the teacher engaged in coaching and the opportunities provided to their students with reading instruction (Sailors & Price, 2015). Using a coaching cycle focused on pre and post virtual conferences, Matsumura et al.'s (2016) study found teachers increased their usage of questioning, meaningfully dividing text into comprehendible chunks for students, and modeling connections between the ideas shared by students. In combination, these studies have shown some of the positive impacts of web-based virtual coaching when combined with other forms of coaching support.

With certain literacy skills, teachers' participation in web-based virtual coaching has shown positive impacts on the growth of some students. Amendum, Bratsch-Hines, and Vernon-Feagans (2018) found in a study focused on using a combination of web-conferencing, real-time feedback, and video during coaching that struggling English language students (*N*=108*)* who were in the treatment group (*n*=24 classrooms) outperformed struggling English language students in the control group (*n*=23 classrooms) on Letter Word Identification and Word Attack, but not on Passage Comprehension. Similarly, with the support of a real-time web-based literacy coach, Vernon-Feagans et al. (2013) found with 75 kindergarten and first grade teachers that Targeted Reading Intervention supported struggling readers in comparison with children whose teachers did not receive web-mediated support. Growth in literacy skills by 631

students were measured by their reading, comprehension, and spelling scores (Vernon-Feagans et al., 2013). Although these results are promising, this study did not look at the quality of implementation of the Targeted Reading Intervention.

Principals and inservice teachers have reported benefits and challenges of professional development support through web-based virtual coaching. In two web-based coaching models with elementary and middle school principals, principals showed a vested interest in supporting instructional practices, felt coaching was beneficial when conducting instructional planning meetings, and appreciated the flexibility and ease of connecting virtually with a coach (Ermeling et al., 2015; Lewis & Jones, 2019). Although principals appreciated virtual coaching, they missed building a one-on-one personal connection with the virtual coach and, in some cases, felt less energized than when participating in face-to-face meetings (Ermeling et al., 2015). Jones and Ringler (2018), in an examination of face-to-face instructional coaching versus virtual coaching by principal candidates (*N*=26*)* with 42 new teacher candidates, found no significant difference between in-person and virtual observations and shared principals benefitted from practicing instructional coaching skills in-person and in virtual environments. Additionally, principal candidates shared the importance of supporting teacher candidates to grow through embedded instructional coaching practice (Jones & Ringler, 2018). Principals also indicated problems with technology access issues, including difficulty of teacher candidates uploading videos via an online platform. Like preservice and inservice teachers, benefits and challenges were also experienced by education leadership.

Web-based coaching was found to be beneficial for the self-efficacy of preservice and inservice teachers. Anthony et al. (2011) in a study with alternative certification teachers found higher self-efficacy scores post e-coaching and steady self-efficacy scores throughout the school year. Additionally, those teachers who attended six or more e-coaching sessions saw statistically significant increases in their self-efficacy (Anthony et al., 2011). However, limitations to this study exist when considering small sample size, the variety of instruction received by teachers in various alternative licensure programs, and the lack of statistical significance of the results (Anthony et al., 2011). Similarly, the self-efficacy of kindergarten and first grade teachers participating in web-based coaching versus face-to-face coaching while implementing Targeted Reading Invention was statistically significant, as well as the quality of the teachers' Targeted Reading Intervention implementation (Vernon-Feagans, Bratsch-Hines, Varghese, Bean, & Hedrick, 2015). Furthermore, in a study with rural middle and high school science teachers, Nugent et al. (2017) found after participating in a summer institute and virtual coaching treatment, teachers showed positive changes in knowledge of science practices and in beliefs and self-efficacy when compared to control teachers who did not receive summer professional development or coaching.

Results of inservice teachers engaging in web-based coaching combined with resources on a web platform varied. In a mixed methods study with pre-kindergarten teachers, Downer, Kraft-Sayre, and Pianta (2009) found teachers who participated in consultancy groups and interacted one to one with consultants in addition to accessing web resources spent more time on the My Teaching Partner website and sent more

videotapes of classroom instruction to their consultant. Additionally, teachers in the consultancy groups valued the ease and supportive nature of consultancies and found benefits when interacting with students (Downer et al., 2009). Furthermore, teachers appreciated access to content and on-going feedback given by their consultant, even if some teachers found it challenging to video classrooms on a bi-weekly basis (Downer et al., 2009). In a study focused on supporting vocabulary and phonemic awareness, Powell and Diamond (2013) found variability in Head Start teachers' use of technology-mediated resources (i.e., exemplar videos), yet high attendance rates for coaching sessions. Furthermore, differences were observed in the amount and type of feedback provided to teachers in onsite versus remote coaching. For example, onsite coaching provided more and extended feedback on strategies than remote coaching (Powell & Diamond, 2013). In contrast, in a study using a web platform for e-coaching for implementing a sex education program, Schutte, Van den Borne, Kok, Meijer, and Mevissen (2016) found the program to have little to no effect on teachers' implementation practices when compared with the teachers who did not have access to the platform. One factor to consider is there was very little engagement with the web platform by teachers in the treatment group, which may have impacted the results (Schutte et al., 2016). Considering the literature on professional development through virtual coaching and the variety of coaching implementations across BIE coaching, video-based coaching, and web-based coaching, there is a lack of quantitative and qualitative research focused on elementary teachers and their perspectives of participating in virtual coaching professional development.

Teacher Perspectives on Virtual Coaching

Preservice and inservice teachers participating in BIE coaching, video-based coaching, and web-based coaching share a variety of perspectives on their experiences. Teacher perspectives are shared on diverse pedagogical implementations supported across each mode of virtual coaching, including, but not limited to, the implementation of communication strategies, supporting students with developmental delays, and virtual coaching across various stages of education.

Bug-in-ear coaching. There are a number of studies related to teacher perspectives on BIE coaching via inservice and preservice teachers. From the perspectives of preservice and inservice preschool teachers, BIE has a positive impact on the implementation of targeted communication strategies. In a multiple-baseline single-case study of four early childhood special educator-child dyads, results showed educators felt BIE supported the intentional implementation of targeted communication strategies, from a list of ten preselected strategies, during classroom routines through immediate feedback and direction from their BIE coach (Ottley & Hanline, 2014). In a similar study, but with preservice teachers, Coogle, Rahn, and Ottley (2015) explored the impact of real-time feedback during BIE coaching on three preservice teachers studying special education. Social validity findings indicated preservice teachers receiving BIE coaching on embedded-communication interventions with children with autism felt BIE coaching supported the implementation and improvement of their communication practices in this setting, as well as the communication skills of their students (Coogle et al., 2015). These findings appeared again in Coogle et al. (2018) multiple-probe single-case study with

four preschool teachers. Perspectives of the teachers implementing naturalistic communication strategies, a type of communication strategy which is intentionally embedded in a routine activity to support students in practicing the skill, indicated BIE coaching prepared the teachers for implementing communication practices during one-on-one activities with their students with greater fidelity (Coogle et al., 2018). Collectively, these studies show that teachers believe that BIE coaching helped them successfully implement communication strategies when targeted support is given; however, results from these studies are not generalizable due to the small sample sizes of the studies.

Perspectives of preservice and inservice teachers working with children with developmental delays and disabilities varied regarding the convenience of BIE coaching. Rock et al. (2014) in a mixed methods study with 14 inservice elementary teachers working on master's degrees in special education found BIE coaching to be easy to use and a valuable technology innovation for receiving coaching. In comparison, 100% (*N*=6*)* of the three co-teaching dyads of general and special education inservice teachers in Ploessl and Rock's (2014) study reported enjoying coaching during co-planning time. Similar findings on the perspectives of inservice and preservice teachers reported by Ottley, Coogle, and Rahn (2015) indicated BIE coaching was less intrusive than anticipated and allowed for instruction to happen as usual in their early childhood classrooms. In this same study, teachers shared contrasting views when technology use was considered. For example, teachers noted difficulties with hearing the coach in a noisy environment, experiencing echoing in the ear piece, and having to overcome bandwidth

issues during Skype™ calls (Ottley et al., 2015). Ottley and Hanline (2014), who studied the impacts of BIE coaching on four inservice early childhood educator dyads (educator-child), also found the noise level of the classroom to be hindering when receiving feedback via the ear piece, but teachers shared it was not enough of a challenge to impact the effectiveness of the coaching. Similarly, Scheeler, Congdon, and Stansbery (2010), who studied three general and special education teacher dyads, shared participants found the ear pieces distracting at the beginning of the trial but adjusted and felt the device became unobtrusive. Likewise, Ploessl and Rock (2014) found that even though 100% of the three dyads of co-teachers found BIE coaching helpful during co-planning, 20% of participants found it distracting during the implementation of instruction. Although the perspectives of teachers indicated BIE coaching is convenient to use, it is a technology-enabled innovation which has been shown to both positively and negatively impact the efficiency of the coaching practice.

Similar findings with the technology-enabled innovation, BIE coaching, were found with preservice general education teachers as with preservice and inservice teachers working with children with developmental delays and disabilities. In a review of preservice teacher studies, there is research which shows sometimes technology for BIE coaching causes difficulties while other studies report little to no problem. Wake et al. (2017) found preservice teachers liked the authenticity of having their university supervisor digitally connect and view their instruction while not skewing the student-teacher interactions during the lessons as is often the case during traditional observations. Likewise, in Benson and Cotabish's (2014) study, participants reported similar

perspectives on the benefits of virtual coaching. For example, teachers saw the method as a way to conduct non-intrusive observations while receiving real-time feedback, to easily access and receive professional development, and to enhance their technology skills (Benson & Cotabish, 2014). Furthermore, Sharplin, Stahl, and Kehrwald (2016) found participants appreciated the real-time access to their BIE coach who served as an internal co-teacher with a goal of supporting the implementation and pivoting of instruction during an observation. Although these studies promote the positive nature of using a technology-innovation like BIE coaching, Hollett, Brock, and Hinton's (2017) study reports different perspectives. In a qualitative study focused on supporting preservice teachers in delivering instruction to students, 50% (n=16) of participants indicated distractions due to technological malfunctions, including ear bud static, using earpieces with cords, and the ear bud randomly falling out during coaching (Hollett et al., 2017). Additionally, these participants also struggled with managing feedback received by a coach while giving their own instructions to students (Hollett et al., 2017). In comparison, Wake et al.'s (2017) participants also shared the struggle with managing varies technology devices and their need for more technological support to implement BIE coaching into their context. Like with preservice and inservice teachers implementing BIE while instructing children with developmental delays and disabilities, preservice general education teachers also struggled with implementing BIE coaching into their instruction when technology issues arose.

According to preservice and inservice special education teachers, giving and receiving feedback via BIE coaching was a positive experience. In a multiple-baseline

study with three dyads of general and special education pairs, Scheeler et al. (2010) found that co-teachers enjoyed giving feedback via BIE coaching because they saw the immediate change in their co-teacher's practice as a result of the feedback. In addition, the co-teachers felt that giving feedback via the BIE device was enjoyable, allowed them to support each other, and reinforced positive instructional practice (Scheeler et al., 2010). On the receiving end, co-teachers felt encouraged by the feedback and were appreciative of the bird's eye view perspective gained by having another person watch and provide immediate feedback on their teaching. (Scheeler et al., 2010). Similarly, as a result of the coaching implementation, Coogle et al. (2015) found early childhood preservice special education teachers enjoyed BIE coaching due to the perceived beneficial changes in their practice and with students. In a later study with two special education teachers, Coogle, Rahn, Ottley, and Storie (2016) reported similar perspectives when talking about the embedded nature of modeling strategies in their current practice as a result of BIE coaching. Furthermore, in a mixed methods study with inservice elementary teachers working on a master's degree in special education, Rock et al. (2014) found that thirteen out of the fourteen teachers appreciated the positivity and encouraging nature of the feedback given by their BIE coach. Together, these studies show the perspectives of preservice and inservice special education teachers on job-embedded support, like BIE coaching.

During BIE coaching, positive perspectives reported by preservice and inservice special education teachers stem from coaching feedback. In a single-case intervention design with four educator-child dyads, Ottley and Hanline (2014) found the feedback

from BIE coaching supported targeted behaviors and encouraged teachers to implement strategies from their toolboxes when appropriate. Additionally, teachers mentioned the importance of receiving discrete feedback via the BIE device while not interrupting the children's instruction. These findings were echoed in a later study conducted by Ottley et al. (2015). Based on the perspectives of these teachers, the immediate feedback given through BIE coaching allowed the teachers to embed and practice the implementation of strategies in real-time, which they found particularly helpful (Coogle et al., 2016; Ottley et al., 2015). Although teachers appreciate the immediacy of BIE coaching, not all feedback can be delivered and implemented in practice with such immediacy which is important to this study.

Like preservice special education teachers, preservice general education teachers found feedback during BIE coaching to be beneficial. In a qualitative study with six preservice non-traditional master's teachers participating in BIE peer coaching, participants reported feeling encouraged from receiving immediate feedback from their peers (Benson & Cotabish, 2014). Based on later findings from Sharplin et al.'s (2016) study, who reported the perceived positive changes of students' behaviors as a result of the teachers' instruction, the feelings of encouragement shared by participants in Benson and Cotabish's (2014) study may have been a result of the perceived positive impact of BIE coaching on their instruction and students' learning. For example, Benson and Cotabish's participants shared perspectives that BIE coaching supported real-time adaption of their practice. In comparison, Wake et al. (2017) explored BIE coaching as a modification of a master's education program's clinical internships with 16 participants.

Based on interviews, Wake et al. found participants appreciated the immediacy of feedback in comparison with delayed feedback given during traditional internship experiences. The positive perspectives of participants centered around the supportive nature of the feedback and the immediacy at which they could put the feedback into practice with students (Wake et al., 2017). Due to the success of this BIE coaching model, the step-by-step approach for implementing this particular type of coaching with teacher candidates was published by Regan and Weiss (2020). Similar to the previous study, Hollett et al. (2017) found preservice teachers who received BIE coaching while implementing 12 physical education lessons with elementary aged children reported liking how BIE coaching supported immediate implementation of the feedback. Although preservice teachers liked the immediacy of BIE coaching feedback and the number of participants interviewed in these studies is greater than previous studies, these results cannot be generalized, particularly with the inservice elementary teacher population being examined in this study.

Preservice and inservice special education teachers reported positive emotional responses to BIE coaching and would recommend it to others. A review of studies on BIE coaching conducted with preservice and inservice special education teachers revealed positive perspectives around confidence with implementing new strategies (Coogle et al., 2018; Rock et al., 2014; Scheeler et al., 2010). In these studies, confidence stemmed from positive coaching relationships (Rock et al., 2014), feeling like they could implement strategies tried with their coach on their own (Coogle et al., 2018), and a sense of satisfaction with their growth (Scheeler et al., 2010) due to BIE coaching. Additionally,

positive teacher perspectives about BIE coaching stemmed from feeling happy as a result of getting feedback from their coach (Ottley et al., 2015). Positive emotional responses as a result of coaching experiences prompted BIE coaching participants to recommend this type of coaching to others. In a mixed methods study with inservice elementary teachers working on a master's degree in special education, Rock et al. (2014) found 62% of participants (n=16) would recommend coaching, even at larger scales, to others when the coaching was meaningful to their practice. Similarly, Scheeler et al. (2018) reported special education teachers providing feedback via BIE coaching to paraeducators would recommend it as a form of professional development due to their own positive experiences. Ottley and Hanline (2014) found four teachers in educator-child dyads in early childhood education would recommend BIE coaching to proximal stakeholders, like other early childhood educators and the parents of their students. Resulting recommendations for participating in virtual coaching, like BIE, stem from personal experience with receiving professional development in this manner.

Preservice general education teachers reported feeling a greater connectedness to their university supervisor after experiencing BIE coaching. Due to the technological nature of BIE coaching, preservice teachers who would normally receive delayed feedback via a traditional observation reported BIE coaching as a more comfortable, less anxiety driven (Wake et al., 2017) and less stressful approach (Sharplin et al., 2016) to supervised observations. According to participants in Wake et al.'s (2017) study, they felt reduced anxiety due to their connection to their university supervisor, the supportive nature of real-time feedback during coaching, and their perceived ideas of BIE coaching

as an innovative model for integrating best practices into instruction. Likewise, Sharplin et al. (2016) found participants reported finding value in the BIE coaching process due to tailored feedback given by their university supervisor, and, as a result of the immediate feedback, the visibility of effective instructional practices upon implementation of the feedback. Furthermore, participants shared the value of working with their university supervisor, an experienced teacher, to set goals and receive tailored feedback in real-time to address gaps in the implementation of instruction (Sharplin et al., 2016). With these studies in mind, BIE coaching has been shown to build positive relationships between preservice teachers and university supervisors based on timing and types of feedback, and their experiences implementing feedback into their practice, which are all important to this study.

Video-based coaching. In addition to BIE research, inservice and preservice teacher perspectives on video-based have also been done. Like BIE coaching, the perspectives of preservice and inservice teachers on video-based coaching were favorable due to the training and feedback received during coaching. Kennedy and Lees (2016) found preservice Head Start teachers were initially uncomfortable with sharing video of their teaching with a peer feedback group, but after time found the process to be beneficial and supportive. For example, preservice teachers shared the benefits of having someone outside of their classrooms view their teaching and provide constructive feedback, while also getting to see others teach and to learn from their videos (Kennedy & Lees, 2016). In addition to peer coaching and feedback, Suhrheinrich and Chan (2017) found special education teachers were satisfied with the training (88%) and would

recommend it to others (96%). Similarly, two preservice early childhood special education teachers participating in video coaching with email feedback reported favorable perspectives about the positive impacts the coaching system and the training had on their abilities to use emotional labeling, descriptive praise, and providing choices during instruction (McLeod et al., 2018). Although the results from this study are positive, they cannot be generalized due to the small participant size. Furthermore, in two studies utilizing My Teaching Partner – Secondary, participating teachers felt video-based coaching was beneficial and felt it was a meaningful use of their time (Gregory et al., 2017). Although the studies report positive perspectives for video-based coaching, unlike BIE coaching, teacher perspectives, particularly at the elementary level, are not well studied for this type of coaching.

Web-based virtual coaching. Research on inservice and preservice teacher perspectives on web-based virtual coaching has been done. Satisfaction with performance-feedback via web-based coaching varied with inservice and preservice early childhood teachers. Early childhood teachers who received email performance-based feedback after observations felt the email feedback was effective, meaningful, and beneficial outside the observations (Barton et al., 2013). Barton et al. (2018) results mirrored those of the previous study with an average satisfaction rating of 5.3 out of 6 on the Likert scale for email feedback. More specifically, Hemmeter et al. (2011) reported early childhood teachers felt the descriptive praise strategy was easy to learn and implement, and they enjoyed the e-mail feedback received during implementation of the strategy (Hemmeter et al., 2011). Additionally, participants would recommend email

coaching focused on descriptive praise to other teachers (Hemmeter et al., 2011). Head Start teachers reported positive perspectives relating to the ease and convenience of receiving feedback via email, and the helpfulness of receiving video examples of strategy implementation in the emails (Artman-Meeker et al., 2014). Although participants were satisfied with email coaching, much of the negative feedback during social validity questionnaires resulted from teachers being video recorded, apprehension with having to view videos of oneself teaching, and using technology to access the videos, especially in rural areas, when they preferred face-to-face contact for feedback. Additionally, in Hemmeter et al.'s (2011) study participants did not feel the video examples included in their email feedback were helpful. Like BIE and video-based coaching, the perspectives of inservice and preservice teachers shared similar benefits and barriers with email coaching, but variability in coaching quality was not addressed.

The perspectives of K-12 teachers, across grade levels and content areas, who received support via web-based virtual coaching varied. In a study with middle and high school rural science teachers who received professional development and web-based coaching sessions, Kunz, Nugent, Pedersen, DeChenne, and Houston (2013) found teachers felt coaching provided valuable support for understanding and implementing inquiry-based science into their classrooms, had a positive impact on their instruction, and helped them self-reflect on their practices. Similarly, Carmouche et al. (2018) found middle school special education teachers appreciated the relevance and flexibility of virtual coaching and would recommend it to others as convenient and valuable professional development. Furthermore, in a web-based content-focused coaching model,

Matsumura et al. (2016) reported virtual coaching as a relevant and meaningful support for building confidence when implementing new literacy strategies. Additionally, these teachers (*N*=22) found virtual coaching as beneficial as school-based literacy coaching (Matsumura et al., 2016). Although these studies, including a study with preschool teachers, indicated positive perspectives based on experiences with web-based virtual coaching, teachers also found challenges with this type of coaching. For example, preschool teachers participating in self-coaching utilizing a web platform shared multi-layered perspectives about their experiences. In this study, Shannon et al. (2015a) found preschool teachers felt challenged by the lack of technology training and on-going support received during self-coaching, leading them to feel less confident in implementing new strategies. Additionally, preschool teachers shared a need for increased accountability, feedback, and a support system while participating in self-coaching (Shannon et al., 2015a). With the studies in mind, it is important to note the indicated differences between teachers' perspectives when receiving live virtual support from a coach and participating in self-coaching via a web-based platform.

Implementation of Blended Learning in Elementary Classrooms

Research related on the implementation of blended learning in elementary classrooms often focuses on the successes and challenges of implementing blended learning in K-5 classrooms. In this section of the literature review, I review successful implementations of blended learning in K-5 classrooms, including the growth of students' reading skills while engaging in various blended programs; the impacts of blended learning models on elementary students' performance, attitudes, and skills; the increased

engagement, motivation, and interest of students in blended and flipped learning environments; the positive self-efficacy of students learning in a flipped classroom; and the perspectives of students participating in blended learning environments. Lastly, I discuss the challenges elementary teachers encounter implementing blended learning in K-5 classrooms, including technology issues; having to support students to engage with new blended learning materials; and the lack of differentiated professional development and technology support provided for elementary teachers during implementation.

Successful Implementation of Blended Learning in K-5 Classrooms

Blended learning, a model by which students learn through digital and face-to-face means while having a level of control over pace and pathway (Staker & Horn, 2012), plays a role in reading growth of students in K-5 classrooms using CORE5, an online literacy-based program for reading instruction. Schechter et al. (2015), to measure the efficacy of the CORE5 model with first and second grade students, discovered significant gains in reading comprehension by students on a standardized reading assessment as compared to students not engaged in CORE5. Gains were also shown by a small sub group of English learners (EL), but the gains were not significant due to the small sample size. In a study extending the work of Schechter et al., Prescott et al. (2018) found scores of students in first and second grade, who met usage requirements of the CORE5 program, saw greater gains in reading skills than third through fifth graders who were also using CORE5. In the same study, when examining the scores of ELs, all but first grade saw gains in ELs when compared to the scores of non-ELs using the CORE5 program (Prescott et al., 2018). In contrast, Kazakoff et al. (2018) found, after two years

of CORE5 implementation, first grade EL students saw larger gains in reading growth than non-EL students, while further benefits for at-risk EL and non-EL students were shown as measured by two different reading assessments, Aimsweb and DIBELS Next. Additionally, Kindergarten through fifth grade students showed growth in foundational reading skills over a 20-week implementation period (Kazakoff et al., 2018) and Kindergarten through second grade students showed increased literacy skills with CORE5 when the program was implemented with fidelity (Macaruso et al., 2019). In comparison, Wilkes et al. (2016) discovered general education second grade students receiving reading intervention through CORE5 scored four times higher on the DIBELS Next assessment when compared to the control group. Although the control group made no gains in Instructional Categories according to DIBELS Next, 70% of intervention students either finished CORE5 for their grade level or were in grade level materials by the end (Wilkes et al., 2016). In comparison to the quantitative data on CORE5, Schechter, Kazakoff, Bundschuh, Prescott, & Macaruso (2017) examined the relationship between teacher engagement and student achievement while engaging in CORE5. Teachers who showed increased engagement with the program found students completed more units and increased their time usage as compared to the teachers of students not as invested in using the program (Schechter et al., 2017). Together these studies imply that blended learning supports, like CORE5, for reading skills instruction are beneficial for non-EL and ELs, particularly when teachers are invested in using the program for instructional support in reading.

As measured by various reading assessments, growth in reading scores increased for K-fourth grade students engaging in reading programs other than CORE5. Using the Informal Reading Inventory and Lexile Framework for Reading Comprehension assessments, Ortlieb, Sargent, and Moreland (2014) found in a comparison study of reading comprehension via print-based instruction, hybrid instruction, or exclusively online instruction that fourth grade students who participated in the hybrid or print-based reading clinics outperformed those students who received online reading instruction. With the STAR Reading assessment as a measure, first through fourth grade students using Accelerated Reader, a digital reading program, in conjunction with the teachers' traditional reading program made greater gains in reading scores than students just receiving instruction via the traditional reading program (Shannon, Styers, Wilkerson, & Peery, 2015b). Although positive impacts on students' reading scores were shown, results should be cautiously viewed as the study was funded by the company who owns the Accelerated Reader program and data is limited to a narrow demographic. Along with the CORE5 program, positive results have been shown with other blended learning programs and models focused on reading achievement.

Various blended learning models have shown positive quantitative impacts on elementary students. Fifth grade students in a blended learning class using the My Beautiful Language textbook for learning the Arabic language increased skills in fluency, flexibility, originality, and creative thinking (Al-Madani, 2015). Overall student achievement also increased when compared to students not in the blended learning class (Al-Madani, 2015). Similarly, in a mixed methods study focused on a blended learning

model utilizing one-to-one devices with fourth and fifth graders in math and reading, Rosen and Beck-Hill (2012) reported significantly higher math and reading scores for students participating in the program. In contrast, students in the control group for both grades saw only slight increases in scores for both content areas. Both fourth and fifth grades also saw increases in attendance, more one-on-one interactions with their teachers, and more differentiated support based on needs and interests as compared to students not engaging in the blended learning model (Rosen & Beck-Hill, 2012). Like the previous study but with third graders, Yaghmour (2016) found students participating in a blended learning mathematics program scored higher on a math assessment than third graders taught math using a traditional teaching method. Blended learning has shown to have positive impacts on the achievement of students in a variety of contexts and is relevant to this study.

Blended learning models improved learning attitudes, skills, and performance in fourth and fifth grade classrooms. Two different blended learning models, including theme-based blended learning and the digital platform e-schoolbag, were shown to positively impact the academic performance of fourth grade students while increasing students' motivation (Firdaus et al., 2018) and improving learning attitudes (Hui et al., 2018). For example, in the theme-based learning model, the positive results were corroborated by students who felt the blended learning model increased their motivation and perceived achievement (Firdaus et al., 2018). Through the lens of the instructor, Hui et al. (2018) found the learning attitudes and academic performance of students improved when intentional design of learning was implemented by the instructor. Similarly, Arifin

and Herman (2017) discovered fifth grade students increased their conceptual understanding and self-regulated learning skills while utilizing a web enhanced mathematics course as compared to fifth graders learning mathematics through instruction with a PowerPoint. With these studies in mind, blended learning has been shown to support academic and skills-based learning in fourth and fifth grade classrooms.

However, the success of implementation of blended learning has also been studied in ways other than measuring content outcomes. The use of digital devices in elementary blended learning classes have also shown to increase student engagement and motivation. Prouty and Werth (2015) found teachers reported increased student engagement and motivation when using technology in kindergarten through fifth grade classrooms while teachers benefitted from the increased accessibility of student work for feedback and sharing with parents. Similarly, in a study focused on the integration of digital and engagement devices for developing 21st century learning environments, Varier et al. (2017) reported increased engagement and motivation from elementary students. Observations included the advanced use of digital devices by students to collect and learn new information independently (Varier et al., 2017). However, limitations exist within this study as the full focus of the study was not on elementary teachers and students but included middle school and high school students too. Therefore, this study cannot be generalized to elementary populations. Based on these studies, digital devices when used in blended learning can support the motivation and engagement of elementary students.

Positive impacts were shown on the self-efficacy of fourth and fifth grade math and science students when four different flipped learning models were compared to the

implementation of the conventional flipped learning model, a model where students engage with video instructional videos outside of the classroom (Bergmann & Sams, 2012; Chang & Hwang, 2018). In a self-regulated flipped learning model, a model focused on students setting their own goals during learning, Lai and Hwang (2016) found fourth graders increased their self-efficacy, self-regulation, and their learning achievement when compared to students engaged in a conventional flipped learning model. Although positive, the results of this study cannot be generalized due to the small sample size and the modifications which would be needed to implement the flipped model in an early elementary classroom. Using an interactive e-book-based flipped learning model (all instruction and assessments embedded in an e-book) with fourth grade math students, Hwang and Lai (2017) reported achievements of students based on self-efficacy levels. Students with high and low self-efficacy levels who engaged in the interactive e-book-based flipped learning model showed an increase in math achievement, as compared to the conventional flipped learning model where only students with higher self-efficacy scores showed improved math achievement (Hwang & Lai, 2017). Hwang and Lai also found students who engaged in the interactive e-book-based flipped learning model and who had lower self-efficacy pretest scores spent additional time engaging with math materials than those with higher self-efficacy scores. Similarly, using a flipped learning interactive problem-posing guiding model, Ye, Chang, and Lai (2018) found fifth grade science students increased their self-efficacy and learning achievement as compared to the conventional flipped learning model. Additionally, in a study with fifth grade science students engaged in an augmented reality

(AR) flipped learning model, Chang and Hwang (2018) reported statistically significant benefits in students' self-efficacy, project performance, learning motivation, and critical thinking skills, after engaging in the model. Although benefits were found when compared with the conventional flipped learning model no statistically significant benefits for knowledge tests or cognitive loads were found (Chang & Hwang, 2018). Although models of flipped learning differed, the self-efficacy of students, along with other skills, have shown to be positively impacted.

Elementary students in a flipped learning environment showed increased engagement and interest in learning. In a study focused on implementing a flipped classroom model with fifth grade history students, Aidinopoulou and Sampson (2017) reported increased student engagement in learning activities and statistically significant increases in students' historical thinking skills (concept of time, historical sources, and historical analysis and interpretation), but not in historical content memorization capacity. In addition to the previous study, two studies reported increased engagement from video use in learning. Fourth grade international students perceived video via flipped learning as increasing their understanding when compared to traditional models of learning; leading students to want to engage in the flipped learning model in the future (Matsunami & Nagai, 2015). Similarly, Rieckhoff et al. (2018) reported teachers observed increased use of video and high collaborative group engagement by students during flipped learning. Although not focused on engagement, Chen et al. (2017) found elementary students using AR technology in conjunction with blended learning during a science unit showed increased interest and enjoyment while receiving less direct instruction from their

teacher. Although the two previous studies discuss elementary populations, each study does not explicitly state the elementary grade level making it difficult to generalize the results to the K-5 population. Together, these studies reported how blended learning implementation can increase engagement and interest in learning for students.

Research on the perspectives of students engaged in blended learning have been positive. Truitt and Ku (2018) examined the perspectives of third graders on the implementation of the blended learning model Station Rotation, a model where students rotate at variable or defined times engaged in different learning opportunities including technology (Powell et al., 2015; Staker & Horn, 2012). Researchers found students enjoyed engaging in digital activities, felt like they were learning more material than before the blended model was implemented, and shared that learning during the Station Rotation was fun (Truitt & Ku, 2018). Similarly, Finnish elementary students shared positive perspectives about a technology-mediated writing project. Perspectives included the collaborative nature of the project and the flexibility of engaging in creative work across time and space during blended learning (Kumpulainen, Mikkola, & Jaatinen, 2014). Likewise, fifth grade students engaged in an AR flipped model shared appreciation for being able to move at their own pace, repeat material for clarification, and increased interest in the materials. Additionally, students appreciated the instructional videos and opportunities to ask their teacher clarifying questions (Chang & Hwang, 2018). Although perspectives about blended learning were shared by students in these studies, a limited number of studies exist with a focus on implementation of blended

learning in elementary classrooms, particularly from the perspective of teachers which is important to this study.

Challenges of Implementing Blended Learning in K-5 Classrooms

Elementary teachers and students encountered challenges with implementing blended learning due to technology. Third graders engaging in the Station Rotation blended learning model reported having to troubleshoot the internet and computer problems and dissatisfaction when software or their devices would freeze and delay their work when they were already frustrated by the difficulty of the math curriculum (Truitt & Ku, 2018). Along with students, teachers' frustrations stemmed from a lack of connectivity and technology support when implementing new digital devices. For example, teachers encountered slow connectivity while students tried to access digital resources at the same time, and, in rare instances, had to adapt their lessons due to lack of connectivity (Rieckhoff et al., 2018). Additionally, teachers shared frustrations with a lack of technology support and having to spend time outside of school learning the devices on their own (Prouty & Werth, 2015).

Another challenge of implementing blended learning has to do with the difficulty of getting students to engage with blended learning materials. Teachers implementing a flipped classroom model with fifth grade history students found students needed support with self-motivation and engagement with online content prior to class (Aidinopoulou & Sampson, 2017). Teachers observed that students lost valuable learning opportunities to participate and engage in face-to-face activities when they did not engage with the materials ahead of time (Aidinopoulou & Sampson, 2017). Additionally, Aidinopoulou

and Sampson (2017) found it was necessary to provide parents with knowledge about the model in order to support their children at home to engage with the materials. During interviews with fifth grade students, students shared it was difficult to review materials on the blended platform for assessments and the speed at which they were required to engage with the materials was too fast to process the information (Chang & Hwang, 2018). Together, these studies have shown support for blended learning implementation is necessary for elementary teachers and students.

The lack of support for blended learning implementation is another challenge which elementary teachers struggled with in their classrooms. Ramadan (2017) found through semistructured interviews and observations that elementary teachers struggled with differentiating reading strategies taught for traditional reading and online reading. Teachers also struggled with designing and implementing blended literacy content without a clear blended learning vision from their district, and when little to no support with blended content, planning time, and professional development were not provided. In addition, students struggled with the blended literacy environment when they could not access real-time support from their teachers (Ramadan, 2017). Varier et al. (2017) discovered teachers struggled with the initial implementation of digital devices for blended learning, including having a lack of control over digital resource access and needing to provide scaffolded supports for elementary students. Although these challenges existed, teachers felt the long-term benefits of using digital devices in their classrooms would support the district's goal of 21st century learning (Varier et al., 2017). Along with the above studies, Prouty and Werth (2015) reported K-5 teachers felt

challenged by a lack of differentiated professional development, technology support, and by the increased time outside of school they spent learning and navigating new technology devices. In combination, these studies have shown some of the professional development needs of elementary teachers implementing blended learning which is relevant to this study.

Technology Use in the Elementary Classroom

Technology use in the elementary classroom is influenced by many factors and impacted by teachers' meaningful use of technology in classrooms. In this section of the literature review, I review factors influencing elementary teacher technology use, including the types and frequency of professional development for technology integration; teachers' confidence; the impact of reliable and accessible technology resources and devices; perspectives and beliefs of elementary teachers impacting technology implementation; instructional benefits to students and teachers; planning and implementation time of technology-enabled lessons; and how learning spaces affect technology use by elementary teachers. Lastly, I discuss technology use for blended learning in K-5 classrooms, including the use of digital platforms to provide students with targeted and beneficial support for academic performance; technology use for the development of flipped instructional environments; increasing students' interest and engagement in learning; and the challenges of implementing a blended learning environment.

Factors That Influence Elementary Teacher Technology Use

Elementary teachers are impacted by the types and frequency of professional development offered for technology use in the classroom (Ruggiero & Mong, 2015). Engaging in ongoing professional development on technology integration positively impacted elementary teachers in two different studies. Fourth and fifth grade teachers who participated in 30+ hours of professional development on implementing technology shared the positive impacts computer-based training had on their classroom instruction (Coleman et al., 2016). Similarly, primary school teachers using information and communication technologies (ICT) and receiving ongoing technology training were found to use technology in their classrooms at increased rates (Hlásná et al., 2017). Although teachers share positive perspectives about training on technology integration, teachers do not always receive the training they need to successfully use technology in their classrooms. For example, Nikolopoulou and Gialamas (2015) found Kindergarten teachers perceived a lack of technical and administrative support and lack of training as barriers to using technology. Another barrier indicated is the type of professional development offered for technology integration (Christensen & Knezek, 2017; Ruggiero & Mong, 2015). Christensen and Knezek (2017) found the perceived needs of elementary teachers with professional development, when compared to middle and high school teachers, was different. Elementary teachers shared a greater willingness and positivity about using digital devices in the classroom than middle and high school teachers (Christensen & Knezek, 2017). Although elementary teachers were more open to using digital devices, Darling-Aduana and Heinrich (2018) found teachers in K-5 classrooms

perceived inadequate professional development as a factor impacting their willingness to use technology in the classroom, especially for teachers with less technology confidence. In addition to the above factors, a lack of opportunities to define the types of professional development offered and how technology is integrated with content were named by elementary teachers as barriers to integrating technology (Vrasidas, 2015). With these studies in mind, professional development to support elementary teachers with technology integration was an important factor considered in this study.

The confidence level of elementary teachers has been shown to impact technology use in the classroom. When impacted by barriers like access to reliable technology, lack of training and administrative support, and large class sizes, elementary teachers who have high technology confidence, greater experience with technology, and have been teaching for fewer years are impacted less by the challenges of implementation (Nikolopoulou & Gialamas, 2015). Although confidence with using technology may lessen these factors and increase technology integration (Coleman et al., 2016), Spiteri and Rundgren (2017) found elementary teachers' confidence often stems from using technology in traditional ways, like for planning and delivery but not for content creation (Spiteri & Rundgren, 2017). The lack of confidence also influences technology use. Additional studies with elementary teachers showed lack of confidence (Darling-Aduana & Heinrich, 2018; Phirangee, 2013; Ruggiero & Mong, 2015) as a factor in technology implementation noting specifically lesser confidence with unknown tools and devices due to inexperience with technology (Phirangee, 2013). Confidence with technology impacts the integration of digital tools in the elementary classroom.

Access to reliable technology and resources have been shown to impact elementary teachers' use of technology. Two studies shared negative impacts on kindergarten teachers. Nikolopoulou and Gialamas (2015) found kindergarten teachers perceived a negative impact on technology use when access to reliable technology and computers for instruction were lacking. Similarly, Lim (2015) reported access to accessible and appropriate websites as challenging for kindergarten teachers implementing technology. In comparison, elementary teachers in older elementary grades corroborate these research findings from the kindergarten studies. In four studies focusing on the technology use of elementary teachers, teachers shared challenges with technology use due to limited access to resources (Jones, 2017; Varier et al., 2017), digital software (Darling-Aduana & Heinrich, 2018), and internet access for in school and at home purposes (Varier et al., 2017). Additionally, teachers shared difficulties related to curriculum not designed for technology use as a barrier to technology integration (Varier et al., 2017; Vrasidas, 2015). Based on these studies, technology use by elementary teachers has been shown to be negatively impacted by reliability issues related to technology and access to resources.

The perspectives and beliefs of elementary teachers have been shown to impact technology use in the classroom (Lim, 2015). After assistance and practice with technology, teachers teaching deaf/hard-of-hearing students found using technology with their learners to be very valuable (Shelton & Parlin, 2016). Similarly, primary school teachers using ICT shared positive perspectives about ICT and felt like it was an innovative approach to teaching and learning with minimal negative impacts on student-

teacher relationships (Hlásná et al., 2017). However, these same teachers did not feel like ICT increased their effectiveness in the classroom (Hlásná et al., 2017). Teachers' perceptions of teaching and learning effectiveness often depend on their beliefs and, in return, technology integration in the classroom is impacted. For example, Thibaut et al. (2015) reported a teacher with student-centered learning beliefs is more likely to use technology in student-centered ways instead of teacher-centered methods. Likewise, Ruggiero and Mong (2015) shared two factors impacting technology implementation. Teachers with a more student-centered approach to using technology viewed technology as a process (Ruggiero & Mong, 2015). In contrast, a teacher who shared a more teacher-centered belief saw technology as a method of content delivery (Ruggiero & Mong, 2015). Knowing that perspectives and beliefs impact technology integration, de Aldama and Pozo (2016) found a gap between what teachers believe about effective technology integration and what they implement in the classroom. When looked at together, elementary teachers' perspectives and beliefs impact technology use in many ways.

Observed benefits to instruction and students is another factor impacting technology use by elementary teachers. Two studies with elementary teachers reported positive perspectives on the engagement level of students during technology integration. Shelton and Parlin (2016) reported teachers' positive perspectives about students' interest in engaging with technology and playing math games, and the value teachers saw with using technology with deaf/hard-of-hearing students. Similarly, Phirangee (2013) shared positive impacts of technology use on students, including increased engagement and using technology in new ways to support learning. Some of the new ways elementary

teachers have been reported using technology for learning are for individualized and differentiated instruction (Darling-Aduana & Heinrich, 2018; Jones, 2017; Varier et al., 2017), building digital literacy skills (Varier et al., 2017), and for collaboration (Darling-Aduana & Heinrich, 2018). For example, elementary teachers working in a Montessori school appreciated how technology enabled the tracking of students' growth when used for individualized instruction (Jones, 2017). Additionally, elementary teachers shared an appreciation for technology providing students with various ways to learn content (Darling-Aduana & Heinrich, 2018) and as a method for building students' independence (Varier et al., 2017). Through the use of technology in the classroom, elementary teachers have found ways to support students even when encountering challenging factors.

The amount of time elementary teachers spent implementing technology is another factor which impacts technology use in the classroom. In five separate studies, planning for and implementing technology integrated lessons was named by elementary teachers as a barrier of technology use. Varier et al. (2017) and Vrasidas (2015) found teachers were limited in their ability to integrate technology due to an increase in planning time required for technology-enabled lessons (Spiteri & Rundgren, 2017) and the implementation times of those lessons. Similarly, with elementary teachers integrating technology into language learning, Sardegna and Yu (2015) found teachers were limited by the time needed to integrate technology, especially when limited facilities with digital devices were available. Researchers also found teachers' use of transformative technology was, in part, limited by the implementation time of technology-enabled lessons due to outside constraints, like curriculum and testing (Jones,

2017). Together, these studies reported how technology integration depended on the planning and implementation times of technology-enabled lessons.

Learning spaces enabled or limited technology integration in elementary classrooms. The geometric shape of the space and the classroom arrangement impacted elementary teachers' technology use in the classroom by limiting or increasing their ability to use technology (Thibaut et al., 2015; Tondeur, De Bruyne, Van den Driessche, McKenney, & Zandvliet, 2015). Additionally, the class size and their access to technology in the space affected technology use by elementary teachers (Nikolopoulou & Gialamas, 2015; Sardegna & Yu, 2015). Tondeur et al. (2015) also reported that the distance to interactive whiteboards and the number of devices in the classroom impacted when and how elementary teachers used technology in the classroom. Many factors, including classroom arrangement, have been shown to alter how an elementary teacher chooses to use technology for learning. Each of the factors I discussed were related to elementary teacher technology integration in general. Next, I will discuss technology specifically related to blended learning in the elementary classroom.

Technology Use for Blended Learning in K-5 Classrooms

Elementary teachers implementing blended learning for reading instruction have used data from digital platforms to provide targeted support for students. Two separate studies shared the benefits of using digital reports for differentiated instruction in blended learning. Schechter et al. (2015) reported elementary teachers found digital reports, like the performance predicator generated by an online program, provided the necessary data for teachers to design targeted supports for struggling readers. Similarly, Prescott et al.

(2018) found elementary teachers benefitted from computer-generated student gap identification reports to support differentiated instruction. Teachers also found the reports useful in the management of time spent with individual students on targeted material (Prescott et al., 2018). Similarly, but not through digital reports, Kazakoff et al. (2018) shared elementary teachers used real-time data on students' reading skills to differentiate and personalize instruction for students. With these studies in mind, the use of digital data from online platforms during blended learning has been shown to support individualized instruction.

Digital platforms for reading instruction have been shown to help teachers develop instruction and to be beneficial for students when used in a blended learning format. Struggling fourth grade readers utilizing print-based and an online reading platform, myON, showed improved reading comprehension; similar to students using print-based reading materials exclusively (Ortlieb et al., 2014). In contrast, Ortlieb et al. (2014) found fourth graders who engaged only in the online reading program, myON, scored lower in reading comprehension than students engaged in print-based or blended models of instruction. From an instructional standpoint, Schechter et al. (2017) shared that elementary teachers who increased their personal engagement with a digital platform to monitor students' reading skills self-reported increases in the number of lessons they adapted for students and saw students' usage of the platform increase. Elementary teachers also reported increased amounts of time available to complete the program's reading units as a result of the blended learning program (Schechter et al., 2017).

Together, these studies share how digital reading platforms through blended learning can benefit teachers and students.

One way the benefits to elementary students engaged with technology in blended learning models have been studied is in relation to their academic performance. Two studies indicated third graders who engaged with computerized lessons and digital presentation materials (Yaghmour, 2016) and fourth and fifth graders who used one-to-one devices in blended math and reading programs (Rosen & Beck-Hill, 2012) had increased math and reading assessment scores. Additionally, when compared to students not engaged in blended learning, Rosen and Beck-Hill (2012) found fourth and fifth grade students had better attendance and teachers were able to provide more one-to-one and differentiated support. With the intentional design and implementation of a blended learning model, Hui et al. (2018) found fourth grade students who engaged in a blended platform, e-schoolbag, improved academic performance and learning attitudes. Similarly, after engaging with a blended learning platform, first through fourth grade students made pre and posttest gains on the STAR reading assessment (Shannon et al., 2015b). Additionally, Arifin and Herman (2017) found web enhanced learning positively affected the conceptual understanding and self-regulation skills of fifth graders whose teachers used the technology model for learning as compared to the use of PowerPoint presentations. Although the technology models varied, studies have shown improved academic performance by elementary students engaged in blended learning.

Elementary teachers have also used technology to develop flipped instructional environments. Various technology implementations of the flipped learning model

increased the self-efficacy and learning achievement of elementary students. Two studies looked at the impact of flipped instructional technology on the learning of students. Fourth grade teachers whose students engaged in the interactive ebook-based flipped learning model saw increased math achievement for students with high and low self-efficacy levels (Hwang & Lai, 2017). Additionally, Hwang and Lai (2017) found students with lower self-efficacy pretest scores spent additional time engaging with and reading materials than those students with higher self-efficacy scores. Fourth grade students who used a learning management system for the self-regulation flipped classroom increased their self-efficacy, self-regulation, and their learning achievement when compared to students engaged in a conventional flipped learning model (Lai & Hwang, 2016). In addition to positive impacts on fourth grade students' self-efficacy and learning achievement, studies have shown positive impacts for fifth graders using different flipped learning models. In an AR flipped learning model, Chang and Hwang (2018) found statistically significant benefits in fifth grade students' self-efficacy, project performance, learning motivation, and critical thinking skills. When interviewed in focus groups, students shared their appreciation for being able to move at their own pace and repeat material for clarification (Chang & Hwang, 2018). Using the interactive problem-posing guiding strategy flipped learning model, Ye et al. (2018) found fifth grader science students increased their learning achievement and self-efficacy when compared to the conventional flipped learning model. Together, these studies showed the benefits of technology use within blended learning models on the self-efficacy and learning achievement of elementary students.

Blended learning models using various technology components has shown to improve elementary students' enjoyment and interest in learning. Third grade students participating in the Station Rotation model enjoyed engaging with digital materials, including those on a learning management platform (Truitt & Ku, 2018). Truitt and Ku (2018) reported students felt like they were learning more material than before the blended learning model was implemented. Similarly, two studies on the use of AR technology showed increased interest and enjoyment by students. In a blended learning model, Chen et al. (2017) found elementary students who used AR technology during a science unit showed increased enjoyment and interest in the topic while receiving less direct instruction from the teacher. In a flipped learning model, Chang and Hwang (2018) found similar results with fifth grade students who felt the AR technology increased their interest in material being studied. Together, these studies reported how blended learning implementation increased enjoyment and interest in learning for students.

When technology was used in conjunction with the flipped learning model, elementary students showed increased engagement in learning. Researchers found students' use of instructional videos increased their engagement during collaborative groups (Rieckhoff et al., 2018) and was perceived by students to increase their learning and desire to learn when compared to traditional models of learning (Matsunami & Nagai, 2015). Additionally, Rieckhoff et al. (2018) found with the intentional implementation of technology, teachers observed more self-directed behaviors and more active learning by students in the flipped learning model. In contrast, Aidinopoulou and Sampson (2017) found teachers observed a need for preparing students for engaging in

the model as some students where not self-motivated to engage in the online content prior to class and lost valuable learning opportunities to participate and engage in face-to-face activities Although teachers observed these behaviors, fifth grade history students increased their engagement in activities aligned with historical thinking skills (concept of time, historical sources, and historical analysis and interpretation) and content understanding (Aidinopoulou & Sampson, 2017). In combination, the intentional use of technology by teachers with elementary students has shown to positively impact students' engagement.

Blended learning using various technology tools has shown to increase the engagement and motivation of elementary students. Elementary teachers reported increased engagement and motivation when the integration of digital devices was used for developing 21st-century learning environments (Varier et al., 2017) and when tablets were used in conjunction with supporting devices and applications (Prouty & Werth, 2015). Additionally, with the implementation of digital devices, Varier et al. (2017) reported teachers observed students using devices in advanced student-centered and independent manners to collect and learn new information. In addition to increasing the motivation of students, Firdaus et al. (2018) found increases in fourth grade student learning outcomes after engaging in a theme-based blended learning model using smartphones and media during instruction. These results were corroborated by students who felt theme-based blended learning supported them in increasing their motivation and perceived achievement (Firdaus et al., 2018). Based on these studies, when used in a

blended learning model technology through various digital devices can increase students' motivation and engagement.

Although teachers reported motivation and engagement as benefits of blended learning for students, some teachers felt challenged by technology use in blended learning. Three studies showed teachers struggled with the initial implementation of digital devices and online materials. Teachers named challenges with learning new digital devices (Prouty & Werth, 2015; Varier et al., 2017), wireless internet connectivity, and having a lack of control over access to digital resources (Varier et al., 2017). Additionally, teachers reported a lack of technology support and differentiated professional development (Prouty & Werth, 2015; Ramadan, 2017), and needing to provide scaffolded supports for elementary students (Ramadan, 2017; Varier et al., 2017) as additional challenges. In at least one study, although these challenges existed, teachers felt the long-term benefits of using digital devices in their classrooms would support the district's goal of 21st century learning (Varier et al., 2017). Although studies have shared the benefits of technology usage on engagement and motivation for students, teachers felt technologically challenged when implementing blended learning which is important to this study.

The examination of literature on factors influencing the technology use of elementary teachers and technology use for blended learning in K-5 classrooms surfaced many important understandings about technology use by elementary teachers. In current literature, teachers are reported as using technology for providing targeted support to students (Schechter et al., 2015), to increase academic performance (Hwang & Lai,

2017), develop instruction (Schechter et al., 2017), and improve enjoyment (Chen et al., 2017) and engagement in learning (Shelton & Parlin, 2016). Although teachers have been shown to use technology in impactful ways, elementary teachers are often challenged by the reliability and access to technology (Lim, 2015), their own confidence level and beliefs (Ruggiero & Mong, 2015), and the frequency and types of professional development they receive on technology use (Darling-Aduana & Heinrich, 2018). Although many perspectives have been shared by teachers on factors affecting technology use in the classroom, literature was not present that focused on the perspectives of educators implementing blending learning while being supported by a virtual coach.

Summary and Conclusions

Summaries of Kolb's (1984) experiential learning theory and Magana's (2017) T3 framework provided lenses for examining literature related to the perspectives of elementary teachers implementing blended learning while participating in virtual coaching. A review of the literature surfaced five themes. The emerging themes consisted of factors which influence elementary teacher technology use; the use of technology for blended learning in K-5 classrooms; types of professional development through virtual coaching; teacher perspectives on virtual coaching; and successful implementation of blended learning and the challenges encountered implementing blended learning in K-5 classrooms. The gathered themes from the literature review served as the basis of examining the perspectives of elementary teachers implementing blended learning while participating in virtual coaching in the current study.

The first theme, factors that influence elementary teacher technology use, revealed that although benefits, like increased academic performance and increased engagement and interest levels (Chen et al., 2017; Hwang & Lai, 2017; Truitt & Ku, 2018; Varier et al., 2017), have been shown with elementary students as a result of technology use in the classroom, technology use by teachers is impacted by many factors. For example, classroom teachers had to overcome many obstacles, including time needed for the planning and implementation of technology integrated lessons (Spiteri & Rundgren, 2017; Vrasidas, 2015), access to reliable technology resources and devices (Lim, 2015; Nikolopoulou & Gialamas, 2015; Varier et al., 2017) and their own confidence levels and beliefs about technology use in the classroom (Darling-Aduana & Heinrich, 2018; Ruggiero & Mong, 2015). Although research looked at both student and teacher perspectives and the impacts of technology use in the classroom, a gap in perspectives based on teacher participation in virtual coaching while implementing blended learning existed, as well as through the lenses of Kolb's (1984) experiential learning theory and Magana's (2017) T3 framework.

The second theme in the literature review was the use of technology for blended learning in K-5 classrooms. Technology for blended learning was used to individualize and personalize instruction (Firdaus et al., 2018; Prescott et al., 2018), to implement flipped learning instruction (Matsunami & Nagai, 2015; Rieckhoff et al., 2018), and for data collection to support students in targeted ways (Prescott et al., 2018; Schechter et al., 2015). Although the methodologies of these studies were both qualitative and quantitative, there was a large focus on data collection from classroom implementation

and no data shared about professional development supports provided for the implementation of blended learning by elementary teachers of which is the focus of this study.

The third theme from the literature review was the different types of professional development through virtual coaching including BIE coaching, video-based coaching, and web-based coaching. When research from the types of coaching is considered, virtual coaching includes a supportive coach who provides opportunities for feedback and reflection using methodologies which are convenient and flexible while supporting the growth of education practitioners and their students (Barton et al., 2018; Gregory et al., 2017; Ottley et al., 2018). Although qualitative methodologies were abundant in BIE coaching, video-based and web-based coaching methodologies mainly focused on quantitative methods. Qualitative research was needed to explore professional development through web-based virtual coaching.

The fourth theme apparent in the literature review was teacher perspectives on virtual coaching. Teachers shared positive perspectives on the impact of virtual coaching on the implementation of strategies (Ottley & Hanline, 2014), its convenience (Artman-Meeker et al., 2014), and on receiving feedback from the coach (Hemmeter et al., 2011; Rock et al., 2014). Although much research has been conducted on the perspectives of teachers using BIE coaching via qualitative methods, a limited number of studies within the last five years have focused on teachers' perspectives while participating in video-based coaching (Gregory et al., 2017; Kennedy & Lees, 2016; McLeod et al., 2018; Suhrheinrich & Chan, 2017) or web-based coaching (Barton et al., 2018; Carmouche et

al., 2018; Matsumura et al., 2016; Shannon et al., 2015a). Teacher perspectives on web-based virtual coaching was needed to capture the experiences of elementary teachers implementing blended learning.

The final theme of the literature review focused on the successes and challenges with blended learning in K-5 classrooms. Blended learning can positively impact elementary students' performance, attitudes, and interests (Firdaus et al., 2018; Hui et al., 2018) in a variety of contexts when intentionally and successfully designed and implemented in the classroom. However, elementary teachers felt challenged by a lack of differentiated professional development, technology support, and by the increased time outside of school they spent learning and navigating new technology devices for blended learning implementation (Prouty & Werth, 2015). Although much quantitative research has been done on the impacts of blended learning models on students' performance (Al-Madani, 2015; Kazakoff et al., 2018), limited studies have looked at teacher perspectives of blended learning implementation, except when embedded in quantitative methodologies (Aidinopoulou & Sampson, 2017; Prouty & Werth, 2015). Little to no studies had specifically looked at the perspectives of K-5 teachers while implementing blended learning (Varier et al., 2017), particularly on the professional development needs for implementing blended learning of which this study explored.

In Chapter 3 I describe the research design and rationale and the roles of the researcher. I review the participation selection logic and instrumentation I used in the study, and provide my procedures for recruitment, participation, and data collection.

Lastly, I discuss the data analysis plan used in the study and the issues of trustworthiness in the study.

Chapter 3: Research Method

Introduction

The purpose of this basic qualitative research study was to explore the perspectives of elementary teachers on the usefulness of individualized virtual coaching in supporting their blended learning implementation. To fulfill that purpose, in this study I explored the perspectives of elementary teachers through the lens of Kolb's (1984) experiential learning theory and Magana's (2017) T3 framework.

In Chapter 3, I describe the research design and rationale, including the research designs I did not choose for this study, and discuss my role as the researcher. In the methodology section, I discuss participant selection, instrumentation, recruitment, and data collection and analysis. Furthermore, I discuss issues of trustworthiness and ethical considerations to be considered in this study.

Research Design and Rationale

The RQs for this study are based on the conceptual framework and the literature review:

RQ1: What are elementary teacher perspectives on the usefulness of individualized virtual coaching to support their blended learning implementation?

RQ2: How does the level at which teachers use technology influence the perspectives of the virtual coaching support during blended learning implementation?

Rationale for Research Design

A basic qualitative design, also referred to as generic qualitative inquiry, traditional, and interpretative description, was selected to explore the perspectives of

elementary teachers implementing blended learning while participating in virtual coaching. Researchers using basic qualitative research are interested in the interpretation of experiences (Merriam & Tisdell, 2016; Patton, 2015), the meaning applied to the experiences (Merriam & Tisdell, 2016), and how the participant reflects on those experiences (Percy et al., 2015). For example, Merriam and Tisdell (2016) defined studies using the basic qualitative research method as those whose "purpose is to *understand* how people make sense of their lives and their experiences" (p. 24). Furthermore, a basic qualitative study collects data from peoples' experiences to understand the interpretations of those experiences (Merriam & Tisdell, 2016) which is aligned to the purpose of this study.

A basic qualitative study was chosen for its alignment to the virtual coaching professional development elementary teachers experience. In the education field, basic qualitative research is a commonly used research methodology (Merriam & Tisdell, 2016). Because this research study focused on the practical consequences and useful applications of the specific phenomenon, this methodology was an appropriate approach for capturing teacher perspectives with virtual coaching. A basic qualitative design was used instead of a generic qualitative inquiry, as shared by Patton (2015), because of the perceived ambiguity of the term *generic* even though the research design has been deemed a valid research approach (Percy et al., 2015). According to Merriam and Tisdell (2016), basic qualitative research supports researchers in examining how individuals interpret their experiences and the meaning connected to those experiences. In the case of virtual coaching, elementary teachers engage in a one-on-one conversation with their

virtual coach and experience coaching through an individual lens. With this structure in mind, basic qualitative research allowed for data to solely be collected via individual interviews which mirrors and provides similar conditions as virtual coaching sessions (Merriam & Tisdell, 2016; Percy et al., 2015). Also, Merriam and Tisdell note basic qualitative research focuses on nonprobabilistic sampling, like purposive or purposeful, which allows for criterion-based selection, like elementary teachers who have experienced virtual coaching while implementing blended learning, to find the most appropriate participants aligned to this study. Additionally, this methodology allowed for the use of interview responses in determining if saturation had been met in the study (Merriam & Tisdell, 2016; Patton, 2015).

Other Qualitative Designs Considered

Four qualitative designs, including phenomenology, ethnography, grounded theory, and case study, were considered for use in this research study. Patton (2015) defines phenomenology as "a focus on exploring how human beings make sense of experience and transform experience into consciousness, both individually and as shared meaning" (p. 115). With the purpose of this study being to explore the perspectives of elementary teachers on the usefulness of individualized virtual coaching in supporting their blended learning implementation, a phenomenological research design was not appropriate because the study did not seek to understand the essence or structure of coaching. Patton also shares that "a phenomenological study is one that focuses on descriptions of what people experience and how it is that they experience what they experience" (p. 117). However, in this study, the focus was not on how an elementary

teacher experiences virtual coaching, but on their perspectives on the usefulness of coaching in supporting the implementation of blended learning.

In addition to phenomenology, grounded theory was considered for this study. Patton (2015) defines grounded theory as a research methodology focused on developing theory while focusing on procedures through action. In this study, grounded theory was not an appropriate methodology as data from participant interviews was not being used to develop a theory about virtual coaching for blended learning (Merriam & Tisdell, 2016). In the case of this study, two conceptual frameworks, Kolb's (1984) experiential learning theory and Magana's (2017) T3 framework, were used to explore the perspectives of elementary teachers implementing blended learning while participating in virtual coaching. The perspectives of participants through the lens of the two conceptual frameworks grounded the study.

The research design ethnography was considered for this study. Merriam and Tisdell (2016) define ethnography as a methodology focused on striving "to understand the interaction of individuals not just with others, but also with the culture of the society in which they live" (p. 24). As a research design, ethnography was not appropriate for this study because elementary teachers participating in virtual coaching for blended learning implementation are not culturally connected, meaning the researcher is unable to conduct fieldwork and make extensive observations about the culture of virtual coaching (Patton, 2015; Percy et al., 2015). In contrast to the research design of ethnography, I chose participants for this study based on their diverse technology levels using Magana's (2017) T3 framework.

The case study is the last qualitative design that was considered for this study. Yin (2014) describes a case study as an "empirical inquiry that investigates a contemporary phenomenon in depth and within its real world context" (p. 16). In addition, Patton (2015) shares that a case study "stands on its own as a detailed and rich story about a person, organization, event, campaign, or program" (p. 259). Although this study investigated a contemporary phenomenon, the focus of this study was not on collecting in depth information about individuals' experiences through multiple data sources but on capturing more broadly, across the K-5 grade levels and various contexts, the perspectives of elementary teachers on the usefulness of virtual coaching while implementing blended learning (Merriam & Tisdell, 2016; Percy et al., 2015).

Role of the Researcher

For this basic qualitative study, I served as the primary investigator. In my role as the primary investigator, my conceptual frameworks served as my lens for observation, data collection, and data analysis. Prior to conducting interviews, I was responsible for selecting the research design, determining criteria for participant inclusion in the study, determining the types of data sources, and creating data collection instruments. Additionally, it was my responsibility to develop procedures for the recruitment of participants, how data would be collected and analyzed, and for ensuring trustworthiness through the utilization of strategies for qualitative research.

My role as a researcher did not conflict with my present position as the manager for an education company in the Northeastern portion of the United States. Although virtual coaching is 10% of my job, none of the participants who I recruited for this study

via the virtual coaching program had been assigned to me for coaching. In addition, I chose to study elementary teachers to lessen researcher bias as I solely supported middle and high school teachers as an instructional coach. Furthermore, my role as a manager at this company was not with managing virtual coaching participants, but instead the managing of projects, like professional development and certifications, which support virtual coaches. In addition, to minimize my bias in this study, I conducted member checks (Carlson, 2010), did researcher reflective journaling, acknowledged limitations to the study, and provided transcripts from participant interviews.

Methodology

In this section, I provide details on the methodology of the proposed research study. This section includes participant selection logic, instrumentation, an interview guide, procedures for recruitment, participation, and data collection, and a data analysis plan. Additionally, I discuss issues of trustworthiness like credibility, transferability, dependability, and confirmability, and ethical considerations for the study.

Participant Selection Logic

Participants for this study included elementary teachers who taught kindergarten through fifth grade in a public or private school in the United States and had received at least one year of virtual coaching while implementing blended learning. The purposeful sampling strategy was chosen as the sampling technique due to its focus on information-rich cases, meaning using particular cases, like virtual coaching, to gather data central to the purpose of qualitative research study (Patton, 2015; “Purposeful Sampling,” 2013). Purposeful sampling is defined by Merriam and Tisdell (2016) as a strategic method for

identifying participants whose experiences align to the purpose of the study and the RQs being examined by the study. This sampling strategy was justified because it supported the identification of relevant participants aligned to the inclusion criteria, while allowing the sampling to be narrowed based on the purpose of the study and the RQs being explored. For example, Merriam and Tisdell suggest purposeful sampling be used when information needs to come from a subset of participants who can share relevant information about the experience while the researcher looks through a particular lens. Furthermore, Patton (2015) shares purposeful sampling should be used when relevant information can be gathered from participants and used to gain a deeper understanding about the purpose of the inquiry. Determining the sample size of a study depends on several factors, including the depth and breadth of the RQs, the number of interviews being conducted, and the purpose of the study (Merriam & Tisdell, 2016; Patton, 2015). Although the sample size for a basic qualitative study is somewhat ambiguous, based on the homogeneous nature of the target population and all participants having engaged in one year of virtual coaching, according to Guest et al. (2006) in Sample size (2013) a sample size leading to twelve interviews would most likely be sufficient in meeting saturation. However, it is important to note the context from which the suggested number of interviews was generated and to use caution in setting a particular number with a study outside of this context. With this in mind, Francis et al. (2010) and Sim, Saunders, Waterfield, and Kingstone (2018) share the importance of utilizing emergent themes as a determinant of sample size through the collection of redundant and repetitive data. When this point is reached, researchers refer to this as the stopping point (Francis et al., 2010;

Sim et al., 2018). Based on this information, my target sample size for participation in the study is between nine and twelve K-5 teachers.

After IRB approval, potential participants were identified by a data gatekeeper at the partner organization using the study's inclusion criteria and the company's internal database with participant information. The gatekeeper generated a spreadsheet of all teachers who fit the following inclusion criteria: (a) a kindergarten through fifth grade teacher, (b) taught one of these grade levels in a public or private school in the United States, and (c) received at least one year of virtual coaching while implementing blended learning. The spreadsheet included the following information: (a) participant names, (b) participant email addresses, (c) grade level taught, (d) product type, (e) number of meetings attended, and (f) a list of the learning domains the participant worked on during coaching. The first two columns, participant names and participant email addresses, were important for contacting the participant. Columns c verified if the teacher was a kindergarten through fifth grade teacher. Columns d and e indicated if the product the participant was engaged in was one year of virtual coaching and if the participant engaged in coaching for the year. Column f verified that the participant focused on learning domains for blended learning. Once potential participants were identified, an invitation email with an inclusion questionnaire and consent form as an attachment was sent to potential participants in an effort to recruit them to participate in the study.

Instrumentation

For this study, I designed an interview guide for use while conducting semistructured interviews.

Interview guides. The interview guide is based on research presented by Jacob and Furgerson (2012) and Merriam and Tisdell (2016) in relation to conducting effective interviews for qualitative research. Merriam and Tisdell shared interviews provide the researcher with non-observable perspectives about a specific phenomenon which they normally would not be able to capture on their own. Interviews also provide researchers with the opportunity to understand a human's story (Jacob & Furgerson, 2012). As I interviewed individuals using the interview questions outlined in Table 1, content validity evolved through the constant comparison of interview data to the codebooks and other collected interview data from this study. As Merriam and Tisdell shared, validity "has to be assessed in relationship to the purposes and circumstances of the research" (p. 243). To understand the sufficiency of the data to answer the RQs, I have shown alignment between the eight teacher interview questions and the RQs being studied in Table 1. Interview questions one through six provided data to answer RQ1. These questions focused on gathering information about the perspectives of teachers on their virtual coaching experience and how that experience impacted blended learning implementation in their classrooms. Additionally, interview questions three, four, and five focused on gathering information about virtual coaching through the lens of Kolb's (1984) experiential learning theory. Interview questions seven and eight helped gather data to answer RQ2. These questions focused on collecting information about teachers'

perspectives on technology use in the classroom and how their perspectives have influenced their virtual coaching experience. Interview questions seven and eight focused on gathering information through the lens of Magana's (2017) T3 framework.

Table 1

Interview Questions for K-5 Teachers

Interview questions	RQ1	RQ2
IQ #1: Tell me about your experience and your reasons for participating in individualized virtual coaching.	X	
IQ #2: Describe your relationship with your virtual coach.	X	
IQ #3: How has your virtual coach supported you in reflective practices, if at all?	X	
IQ #4: What was the most useful experience of the virtual coaching you received over the past year?	X	
IQ #5: What was the least useful experience of the virtual coaching you received over the past year?	X	
IQ #6: In what ways did your virtual coach support or hinder your implementation of blended learning?	X	
IQ #7: Tell me more about the role technology plays in your classroom.		X
IQ #8: After engaging in virtual coaching, what is your current perspective on integrating and using technology for teaching and learning?		X

Procedures for Recruitment

In relation to recruitment, I contacted the partner organization to share the purpose of my study and to obtain a letter of cooperation. Once a letter of cooperation was obtained and Walden IRB was approved my study, I contacted the partner organization, as per our cooperation agreement, who provided me contact information of an employee who acted as my gatekeeper. I gave the gatekeeper the study's inclusion criteria, and requested that the company's internal database be used to identify potential

participants. I requested virtual coaching participants from the 2018-19 school year. I asked the research data gatekeeper to generate a spreadsheet including: (a) participant names, (b) participant email addresses, (c) grade level taught, (d) product type (confirmed the length of coaching), (e) number of meetings attended, and (f) a list of the learning domains the participant worked in during coaching. After I received the spreadsheet, I double checked to be sure the potential participants met the inclusion criteria.

Procedures for Participation

Concerning participation, once I identified potential participants as meeting the inclusion criteria, I sent an invitation email. The letter of consent was attached to the email invitation and provided potential participants with detailed information about the study, and what their participation would include; completing a demographic questionnaire, participation in one 30- to 45-minute virtual interview, and conducting a member check using the interview transcript to confirm accuracy of the information. If a potential participant completed the demographic questionnaire, this indicated implied consent to participate in the study.

The demographic questionnaire allowed me to verify the information provided to me by the research data gatekeeper. The first twelve people to complete the questionnaire were selected to participate in the study. According to Guest et al. (2006), a pool of 12 interviewed participants is likely to result in saturation. After interviews, it was determined that no more potential participants were needed as data redundancy and consistency in themes was met (Francis et al., 2010; Sim et al., 2018). Once I verified the demographic information, I contacted participants to set up the 30- to 45-minute virtual

audio-recorded interview. I conducted the semistructured interviews with the participants. After I transcribed the interviews, participants were sent an email with instructions on how to review the transcriptions for content accuracy. If the participant identified discrepancies, I corrected the transcriptions to reflect the changes. Upon completion of the interviews, I sent an email to all participants sharing that the interview process was complete, thanking them for their participation, and informing them that upon publication of the research study, that a link to the publication will be shared with them via email. In this email, I also share that their Amazon gift card was sent in a separate email by Amazon shortly after receiving this email.

Procedures for Data Collection

In relation to data collection, one data source was used in this study. The data source used was semistructured interviews. During the semistructured interviews, I collected data from K-5 teachers who implemented blended learning while participating in virtual coaching. Each semistructured interview was estimated to last between 30 and 45 minutes and was conducted for only one round. I conducted individual interviews virtually via the web conferencing tool Zoom, which was only used to capture audio. Zoom audio-recorded the interviews and automatically transcribed the interview. I checked and corrected the transcriptions for accuracy before downloading and transferring the transcript to a text file. In the case that initial recruitment did not result in nine to twelve participants for the study, I sent follow-up emails to those potential participants who did not reply to the first email request. I did not have to submit a request

for change in procedure form to IRB as I was able to obtain enough participants for the study.

Data Analysis Plan

For this basic qualitative study, I conducted data analysis at two levels. At the first level, I used a priori codes, which are codes established based on experience or from understanding the phenomenon (Saldaña, 2015). Once I established the codes, a codebook was created to ensure consistency of coding during the coding process (DeCuir-Gunby, Marshall, & McCulloch, 2011). For this study, the pre-determined codes were established using two frameworks, Kolb's (1984) experiential learning theory and Magana's (2017) T3 framework. Appendix A shows Kolb's experiential learning theory codebook. Appendix B shows Magana's T3 framework codebook. After the interview transcription process, I used a priori codes to code segments of text in alignment with the conceptual frameworks. Although I used two codebooks to code the interview transcripts, I understand that a priori coding is just a starting point and that codes emerged which did not align with the established codes (DeCuir-Gunby et al., 2011). As a result, in my second level of coding, I focused on identifying emerging codes, those codes focused on finding patterns and themes from the data (Saldaña, 2015). During the coding process, I used Microsoft Office Word to organize my transcriptions and Dedoose to help me make sense of the data I collected.

Part of the data analysis plan is knowing how to treat discrepant data. Data considered discrepant is data which does not conform to what is expected or anticipated by the researcher, particularly when using a priori codes (Merriam & Tisdell, 2016). It is

important to identify discrepant data because all data collected during interviews should be transparently shared. Patton (2015) shares the importance of seeking alternative explanations for data collected during a study in return increasing the credibility of the study. If data is omitted from the study, the researcher has impacted the validity and reliability of the study (Merriam & Tisdell, 2016). To increase the trustworthiness of my study, my plan for dealing with discrepant data includes, along with common themes and patterns, I reported discrepant data in order to give other researchers the full picture into my study.

Issues of Trustworthiness

Trustworthiness is important to qualitative research because it supports researchers in determining if the qualitative research presented is credible, transferable, dependable, and confirmable or objective. Merriam and Tisdell (2016) shared the trustworthiness of the study is no better than the individual conducting and analyzing the data. As the researcher, in order to increase the trustworthiness of the study it is important to be transparent about the research findings, the recruitment process and the demographics and settings of the participants, and to clearly state personal and professional connections to the research study. The rigor of the research design and implementation is one way to build trustworthiness in a study (Merriam & Tisdell, 2016). Along with a rigorous approach, Merriam and Tisdell shared that in a study, trustworthiness is established when ethical practices are considered and implemented throughout the research process. In this section, I outline how I increased trustworthiness in this study through credible, transferable, dependable, and confirmable practices.

Credibility

For qualitative research, Merriam and Tisdell (2016) defined credibility as how closely the "research findings match reality" (p. 242). As proposed by Merriam and Tisdell, qualitative researchers are recommended to use the following strategies to improve the credibility of qualitative research: (a) triangulation, (b) member checks, (c) adequate engagement in data collection, (d) discrepant case analysis, and (e) peer review. The two strategies used to strengthen the credibility of this study are triangulation and member checks. For this study, I triangulated semistructured interview data with member checks and confirmed emerging findings using theoretical triangulation, which served as a deeper analysis of the data (Merriam & Tisdell, 2016; Thurmond, 2001). Member checking is the use of interview participants as examiners of the data collected during the study in order to avoid misinterpretations of the meaning of information shared during interviews (Merriam & Tisdell, 2016). For this study, participants reviewed and confirmed that the transcriptions reflected their perspectives while participating in virtual coaching. For theoretical triangulation, I used two theories to confirm the findings in this study. The conceptual frameworks were Kolb's (1984) experiential learning theory and Magana's (2017) T3 framework. By using both frameworks during data analysis, I was able to conduct a deeper data analysis while looking at the data through two different lenses, and "understand how differing assumptions and premises affect findings and interpretations" (Patton, 2015, p. 673).

Transferability

Merriam and Tisdell (2016) defined transferability as the replicability of the study findings by a different researcher. To support other researchers in determining if this study's findings are transferable, in my study on the perspectives of elementary teachers implementing blended learning while participating in virtual coaching, I provided detailed and rich descriptions of the participants (i.e., grade level taught) and their settings (i.e., public or private school, regional description) (Merriam & Tisdell, 2016). Because I used purposeful sampling, I had readily available information I needed to provide detailed descriptions on the participants and their setting for the researchers reading my study.

Dependability

Ravitch and Carl (2016) defined dependability as data that over time stays stable and consistent while answering the RQs. A method for ensuring the dependability and validity of the findings includes the justification and rationale for the research methodology and using the methodology consistently with participants across various settings (Ravitch & Carl, 2016). In this study, I justified why I chose basic qualitative research as my research design, as it aligned to the virtual coaching process and allowed for the collection of data about peoples' perspectives to understand the interpretations of those perspectives (Merriam & Tisdell, 2016). In addition, I explained how I recruited participants using specific inclusion criteria, collected data during interviews with participants using the same protocols, and interpreted data at the first level using codebooks derived from conceptual frameworks. As my participants were from across the

United States, I ensured that I followed my methodology with participants across these various settings in order to increase the dependability of my study. Once data was collected, I was intentional about presenting findings consistent with the data gathered from interviews (Merriam & Tisdell, 2016). Merriam and Tisdell (2016) share that alignment between the collected data and the presented findings support dependability of the study.

Confirmability

Ravitch and Carl (2016) define confirmability as the equivalent of objectivity. Confirmability requires that a qualitative researcher acknowledge areas of biases; however, doing so with the knowledge that one cannot be fully objective during the research process (Ravitch & Carl, 2016). In this study, I used reflexivity throughout the research process. As an example, I intentionally used the coding process to ensure confirmability in my study. I utilized my codebooks, derived from two conceptual frameworks, to examine my data through two different lenses. By examining my data through these lenses, my personal lens was secondary to the information and perspectives I gained from this coding process. As I reported the findings of the study, I confirmed my findings with the interview transcripts and the data gathered through the coding process in order to ensure dependability and confirmability.

Ethical Procedures

The trustworthiness of qualitative research depends on how researchers follows ethical procedures. According to Merriam and Tisdell (2016), even with the most thorough and rigorous research methodology, the trustworthiness of the study is no better

than the individual conducting and analyzing the data. Knowing the researcher serves as an instrument in the data collection and analysis phases of the research, it is important the researcher follows ethical procedures. One such ethical consideration is the researcher-participant relationship. Merriam and Tisdell share the researcher-participant relationship is pivotal in ensuring the data and findings are credible and reliable. For example, the researcher-participant relationship can impact "how informed the consent can be and how much privacy and protection from harm is afforded the participants" (Merriam & Tisdell, 2016, p. 261). It is imperative that the researcher be mindful of ethical procedures in order to ensure the participants of the study are not harmed.

For this study, I followed ethical procedures by submitting an application to the Institutional Review Board (IRB) at Walden University (Walden IRB approval #10-02-19-0665019). First, I will address the ethical concern of doing a study within one's own work environment. In the methodology section of the paper, I was transparent about my role at the organization and how my role as a manager is not connected to the potential participants who I recruited for this study. Additionally, because I work with middle and high school teachers during virtual coaching, I focused on teachers in the elementary grades for recruitment in this study. Along with transparency about my role, I obtained a letter of cooperation from the partner organization sharing the purpose of the study, the inclusion criteria, the recruitment processes, and how I masked the organization's identity using a pseudonym.

Next, I addressed the ethical concern of recruitment by using a data gatekeeper from the partner organization. The data gatekeeper used the inclusion criteria to provide a

spreadsheet of (a) participant names, (b) participant email addresses, (c) the grade level taught, (d) the product type (confirms length of coaching), (e) the number of meetings attended, and (f) a list of the learning domains the participant worked in during coaching. Individuals who opted into participate in the study were made aware of the voluntary nature of the study and their ability to stop participating in the study at any time. Individuals who opted out of participating in the study were not stigmatized and no information was shared back with the partner organization about who participated or opted out of participating in the study.

The ethical consideration of transparency was addressed by sending a reader friendly letter of invitation to potential participants who met the inclusion criteria for the study along with a consent form. In the consent form, I explained my inclusion criteria and the purpose of the study. The consent form also outlined the risks and benefits of the study so the potential participants could make an informed decision about participating. In the consent form, the voluntary nature of the study was outlined including how the participant could opt out of the study at any time. If a participant chose to opt out, their decision was respected and no information about their decision not to participate was shared back with the partner organization. I informed potential participants about how privacy and protection of data will be maintained for a period of five years using a password protected computer. A review of data collection methods and procedures and how member checking was used to review the findings was also included in the consent form. Potential participants who choose to opt into participating in the study completed a demographic questionnaire.

The ethical concern of confidentiality was addressed in multiple ways. First, during interviews, participants were audio-recorded using Zoom. When the audio-recordings were done processing on Zoom, they were deleted off of Zoom and transferred to two locations, the hard drive of my password protected computer and an external password protected and encrypted hard drive. I was the only individual with access to this research data and will maintain access up to five years after the study was conducted. After five years, the data will be destroyed. After the data was collected from the interviews, participants engaged in a member check of the transcription and analysis. Upon completion of this process, I masked the identities of participants using a number, and shared no identifying characteristics during the research process or findings.

The ethical consideration of incentives was considered in this study. Upon completion of the study, participants who opted into participating in the research study were sent a $15 gift card from Amazon. The reason for this incentive was to recognize the time participants took out of their personal day to participate in the study. The gift card for $15 was chosen because the participants completed a questionnaire, participated in a 30- to 45-minute interview, and completed a member check of the transcripts for content accuracy. To minimize or eliminate the appearance of coercion, in the consent form, I informed participants of the voluntary nature of the study and that if they choose to opt out of the study that their decision was respected and would not be shared back with the partner organization. If a gift card were not offered, I might not have obtained the number of participants I needed to ensure reliability and validity of my study as I was using only one partner organization for this study.

Summary

For this study, the areas reviewed in this chapter were research design and rationale, role of the researcher, methodology, and issues of trustworthiness. The research design was basic qualitative research which was chosen above other qualitative research designs for its alignment with the virtual coaching process. Additionally, it was chosen for its focus on the interpretation of K-5 teachers' perspectives and how participants apply meaning to the virtual coaching experience. In the role of the researcher section, I shared my role as the primary investigator in determining the research design, recruiting participants, conducting interviews, and conducting the data analysis for the study. For the methodology section, I outlined the selection of participants for the study, included an interview guide to be used during semistructured interviews, shared the steps for strengthening trustworthiness of the study, and described the ethical procedures for participants and data collection and reporting.

In Chapter 4, I present the results of this basic qualitative study by describing the demographics, data collection procedures, the data analysis process, evidence of trustworthiness, and the results of the study.

Chapter 4: Results

Introduction

The purpose of this basic qualitative study was to explore the perspectives of elementary teachers on the usefulness of individualized virtual coaching in supporting their blended learning implementation. To accomplish this purpose, I explored RQs which aligned with the problem and purpose of the study and a basic qualitative research design.

The RQs for this study were:

RQ1: What are elementary teacher perspectives on the usefulness of individualized virtual coaching to support their blended learning implementation?

RQ2: How does the level at which teachers use technology influence the perspectives of the virtual coaching support during blended learning implementation?

In this chapter, I report the results of this basic qualitative research study. It includes the setting, demographics, data collection, data analysis for level 1 and level 2 coding, evidence of trustworthiness, results, and the summary.

Setting

The research site for this basic qualitative study was an education technology organization in the Northeastern United States. This organization employs 55 full-time individuals and serves as an education consultant for private and public schools across the country.

Several organizational conditions may have influenced the interpretation of the study results. School factors exist as hidden variables as participants consented to

participate in the study from nine different school sites. Variables influencing the interpretation of the study results may have included each districts' vision for blended learning implementation, the expectations shared with the participants about virtual coaching, the teachers' understanding of and buy-in of the coaching process, and the level of access teachers had to technology devices. Additionally, although coaches' names were not requested from the partner organization, during interviews participants mentioned working with multiple coaches. As a result, participants may have had different experiences while working with different coaches.

Demographics

The participants for this study included 12 kindergarten to fifth grade teachers from nine different private and public school sites. All teachers had taught one of the grade levels in a public or private school in the United States and had received at least one year of virtual coaching while implementing blended learning. Eight of the participants taught at public schools, while four taught for private schools. Three of the participants were from one school site, two from another, and the remaining seven were each from individual school sites across the United States. All 12 of the participants in the study were female. At the time of virtual coaching, one teacher taught kindergarten, one taught first grade, one taught second grade, one taught third grade, one taught fourth grade, six taught multiple grades from K-5, and one was a K-5 special education teacher. Participants attended between 12 and 16 virtual coaching sessions over a one-year period.

Data Collection

For this basic qualitative research study, I collected data from one source. Twelve kindergarten through fifth grade teachers from public or private schools in the United States participated in one round of semistructured individual interviews. All interview data were transcribed and coded using a priori coding methods (see Saldaña, 2015). Using Kolb's (1984) experiential learning theory, four a priori codes were developed: (a) concrete experiences, (b) reflective observation, (c) abstract conceptualization, and (d) active experimentation. The codebook with the a priori codes is in Appendix A. Magana's (2017) T3 framework was used to develop three a priori codes: (a) T1: Translational, (b) T2: Transformational, and (c) T3: Transcendent. The codebook with the a priori codes is in Appendix B.

Interviews

On October 2, 2019, I received approval from the Walden University IRB to conduct this study. After approval, I reached out to the data gatekeeper at the partner organization to obtain the spreadsheet with potential participant information based on the inclusion criteria. In Chapter 3, I discussed how I would recruit participants for my study by obtaining a spreadsheet from the data gatekeeper. The data gatekeeper shared the spreadsheet with me; however, the potential participants on the spreadsheet were added in phases instead of in one group as previously stated. The partner organization had to obtain permission from school districts to contact teachers who met the inclusion criteria prior to distributing the information to me. Potential participants appeared on the spreadsheet as districts provided permission for me to reach out to the teachers. The

recruitment of the participants took place from October 17, 2019 until November 15, 2019. The one round of semistructured interviews started on October 29, 2019. I audio recorded all interviews using Zoom on an Apple MacBook Air. I downloaded the audio recordings and transcriptions from Zoom, deleted them from the platform, and saved them to a secure, encrypted, and password-protected external hard drive. I conducted all interviews virtually from my home office and teachers from a space of their choice. I conducted the first interview with Teacher A on 10/29/19 at 6:00 p.m. This interview lasted 20 minutes. My next interview was with Teacher B on 10/30/19 at 5:00 p.m. The interview lasted 26 minutes. My interview with Teacher C was on 11/7/19 at 12:00 p.m. and lasted 37 minutes. The next interview was with Teacher D on 11/10/19 at 8:00 p.m. The interview lasted 39 minutes. The interview of Teacher E took place on 11/11/19 at 10:00 a.m. and lasted 20 minutes. My interview with Teacher F was on 11/11/19 at 12:00 p.m. The interview lasted 30 minutes. Teacher G was interviewed on 11/11/19 at 2:00 p.m. The interview lasted 30 minutes. My next interview was with Teacher H on 11/13/19 at 6:30 p.m. and was 32 minutes long. My interview with Teacher J was on 11/14/19 at 4:00 p.m. and lasted 38 minutes. Teacher K was interviewed on 11/14/19 at 6:00 p.m. The interview lasted 23 minutes. The interview of Teacher L occurred on 11/18/19 at 5:00 p.m. and lasted 20 minutes. The final interview was with Teacher M on 11/18/19 at 7:00 p.m. It lasted 27 minutes. No unusual circumstances occurred for any of the interviews.

After the interviews, I prepared the data for analysis. First, I used Zoom's embedded transcription tool to make written transcripts from the audio recordings. I

reviewed the transcriptions for accuracy by comparing the audio to the written transcripts. When needed, I updated the text due to inaccuracies, added punctuation, and masked information revealing the coach's name and the partner organization. I sent transcripts with numbered lines to participants to review for accuracy, as described in Chapter 3. Next, I uploaded the Word documents to Dedoose, a coding software, in preparation for coding. In Dedoose, I assigned lettered pseudonyms for each teacher while intentionally removing "I" from the pseudonym list for ease of readability.

Data Analysis

For this basic qualitative study, I conducted data analysis at two levels. At the first level, I used the a priori coding method which DeCuir-Gunby et al. (2011) recommended for qualitative research. To aide in the coding process, I developed two codebooks, one established using Kolb's (1984) experiential learning theory (see Appendix A) and the second using Magana's (2017) T3 framework (see Appendix B). In my second level of coding, I focused on identifying emergent patterns to determine the emergent codes, as shared by Saldaña (2015). See Appendix C for the emergent codebook.

Level 1 Data Analysis

For Level 1 data analysis, based on my conceptual frameworks, I used two a priori codebooks during the coding process. Prior to coding, I uploaded all transcripts to Dedoose, a coding software. In Dedoose, I preloaded my a priori codes for use while coding. I had a code for Kolb's (1984) experiential learning theory and sub a priori codes of concrete experiences, reflective observation, abstract conceptualization, and active experimentation. I also had a code for Magana's (2017) T3 framework and sub a priori

codes of T1: Translational, T2: Transformational, and T3: Transcendent. A sub a priori code was assigned for each text excerpt from the interviews. If a text excerpt did not align with the definition of an a priori code or the inclusion criteria, I did not assign an a priori code. As I coded, I continued to check my codebooks to ensure I assigned the proper codes to text excerpts and made adjustments to the codebook as needed when I gained more clarity about a particular code. The codebooks are located in Appendices A and B. I used a priori codes for Magana's T3 framework to determine the highest level of technology innovation implemented by each teacher. Based on the coded text segments, each teacher was placed in a category (T1: Translational, T2: Transformational, or T3: Transcendent) to show their level of technology innovation in the classroom. I used these codes during data analysis to further examine RQ2. All a priori codes for Kolb's experiential learning theory and Magana's T3 framework were represented by a total of 296 text excerpts during level 1 data analysis. I did not add any additional codes to the codebook for either of the conceptual frameworks.

Level 2 Data Analysis

When I initially started level 2 data analysis, I used Dedoose to code 296 text excerpts for emergent patterns in order to determine emergent codes. However, after trying to move the emergent codes within the platform, I found it easier to use an Excel spreadsheet. The method I utilized moving forward was to click on the a priori code (i.e., concrete experiences) in Dedoose and to copy and paste the text excerpts for each a priori code into a spreadsheet. Each tab of the spreadsheet contained the text excerpts of the different a priori codes. Utilizing constant-comparison coding, as suggested by Merriam

and Tisdell (2016), I identified additional codes which emerged from the data. I grouped these codes to identify the emergent codes for each a priori code aligned to RQ1 (Table 2). I created a codebook documenting the emergent codes with definitions, inclusion criteria, and paraphrased ideas based on teachers' quotes from the interviews (see Appendix C).

Table 2

Emergent Codes for Usefulness of Virtual Coaching for Blended Learning Implementation Aligned to RQ1

A prior code	Code 1	Code 2	Code 3	Code 4	Code 5
Concrete experiences	Technology integration support and implementation	Support for instructional shifts	Professional growth	Outside perspectives and shared experiences	Feedback and reflection
Reflective observation	Professional impacts on the teacher	Technology as a lever for instructional shifts	Impacts on students		
Abstract conceptualization	Integrating technology	Differentiation	Personalization	Professional support	
Active experimentation	Shift in instruction	Reflective practice			
T1: Translational	Digital automation	Consuming information	Support using digital resources	Technology confidence	
T2: Transformational	Student produced authentic evidence	Authentic learning	Authentic evidence		
T3: Transcendent	Learning experiences shaped by students				

Discrepant data are data which do not conform to what is expected or anticipated by the researcher, particularly when using a priori codes (Merriam & Tisdell, 2016). For this study, as recommended by Patton (2015), I shared all discrepant data (N=47) from

the study under a separate heading in the results section, as the data did not conform to the inclusion criteria for any of the a priori codes examined for RQ1 or RQ2.

Evidence of Trustworthiness

I upheld issues of trustworthiness in a number of ways. In this section, I describe how I ensured credibility, transferability, dependability, and confirmability throughout the research process.

Credibility

For qualitative research, Merriam and Tisdell (2016) defined credibility as how closely the "research findings match reality" (p. 242). As suggested by Merriam and Tisdell, qualitative researchers are recommended to use triangulation, member checks, adequate engagement in data collection, discrepant case analysis, and peer review to improve the credibility of data collection. As described in Chapter 3, I ensured the credibility of my study by using triangulation and member checks. I made no modifications or additions to the process outlined in Chapter 3.

As suggested by Merriam and Tisdell (2016), I used a theoretical triangulation of the data and emergent findings from the 12 semistructured interviews (see Merriam & Tisdell, 2016; Thurmond, 2001). To conduct the theoretical triangulation, I used the a priori codes established from Kolb's (1984) experiential learning theory and Magana's (2017) T3 framework to conduct a deeper data analysis of the data (see Patton, 2015). I used the pre-established codebooks for both of the conceptual frameworks to conduct a constant-comparison of the text excerpts and the definitions and used the inclusion and

exclusion criteria for each framework. When text excerpts aligned with the definition and inclusion criteria, the text was coded using one of the a priori codes from the codebooks.

To avoid misinterpretations of the meaning of information shared during interviews, I had participants examine the data collected during the interviews using a process called member checking (see Merriam & Tisdell, 2016). After each interview was transcribed, I sent individual transcripts to each participant to conduct a review of what they shared. Participants reviewed and confirmed that the transcriptions reflected their perspectives while participating in virtual coaching. Only two participants reached out via email to share additional information they wanted added to their interview answers.

Transferability

Merriam and Tisdell (2016) defined transferability as the replicability of the study findings by a different researcher. To support other researchers in determining if the findings of the study are transferable, in my study on the perspectives of elementary teachers implementing blended learning while participating in virtual coaching, I provided general descriptions about the participants' school type (public or private), the number of individuals at each school site, gender, the grade levels taught during coaching, and the range for the number of virtual coaching sessions held during the one-year period. I gathered all information about participants' demographics from the spreadsheet shared by the data gatekeeper and during individual interviews. Although I shared in Chapter 3 that I would provide detailed descriptions of each participant and their setting, after recruitment and interviews I choose to discuss demographics more

generally to avoid revealing information which could be used by individuals to determine who participated in the study, particularly because some individuals were from the same school sites.

Dependability

Ravitch and Carl (2016) defined dependability as data which over time stays stable and consistent while answering the RQs. A method for ensuring the dependability and validity of the findings includes the justification and rationale for the research methodology and using the methodology consistently with participants across various settings (Ravitch & Carl, 2016). In this study, I followed the recruitment protocol I discussed in Chapter 3 by using the inclusion criteria to ensure all participants met the criteria before participating in interviews. As my participants were from across the United States, I followed my methodology with participants across these various settings in order to increase the dependability of my study. Once data were collected, I intentionally presented findings consistent with the data gathered during interviews (see Merriam & Tisdell, 2016). For example, I used a priori codes aligned with my conceptual frameworks to tell the story of my participant's interview data. As suggested by Merriam and Tisdell (2016), the alignment of the collected data and the presented findings supports the dependability of my study.

Confirmability

Ravitch and Carl (2016) define confirmability as the equivalent of objectivity. Confirmability requires that a qualitative researcher acknowledge areas of biases; however, doing so with the knowledge that one cannot be fully objective during the

research process (Ravitch & Carl, 2016). In this study, I used reflexivity throughout the research process. I intentionally used the coding process to ensure confirmability in my study. For example, utilizing my codebooks, I examined and coded my data using two conceptual frameworks. My personal lens was secondary to the information and perspectives I gained from coding. After I coded results and was writing the results section, I confirmed all findings with interview transcriptions to ensure dependability and confirmability. In addition, I used my reflection journal to document my thoughts as I reviewed, coded, and wrote about the interview data, and used the journal to document where I was in the process to ensure accuracy of the data and provide further transparency about my process.

Results

In this section, I organized the results by RQ then a priori codes based on Kolb's (1984) experiential learning theory and Magana's (2017) T3 framework. Under each a priori code, where appropriate, I included emergent codes represented visually using frequency tables.

Usefulness of Virtual Coaching for Blended Learning Implementation

The first RQ was what are elementary teacher perspectives on the usefulness of individualized virtual coaching to support their blended learning implementation? I asked teachers to reflect on virtual coaching, their virtual coach, and on their implementation of blended learning while receiving coaching support. I used the a priori codes for Kolb's (1984) experiential learning theory and Magana's (2017) T3 framework to categorize the responses teachers shared during the semistructured interviews. The frequency of

responses for each a priori code, for this RQ, are shown in Tables 3 and 4, with the majority of codes in alignment with the a priori codes representative of the first three segments of Kolb's experiential learning theory and the T1: Translational level of Magana's T3 framework.

Table 3

Frequency of A Priori Codes for Each Teacher Aligned to Kolb's Experiential Learning Theory for RQ1

Teacher code	Concrete experiences	Reflective observation	Abstract conceptualization	Active experimentation
Teacher A	2	1	2	0
Teacher B	4	7	5	0
Teacher C	6	8	8	1
Teacher D	10	6	5	1
Teacher E	9	7	5	0
Teacher F	12	6	4	0
Teacher G	7	9	2	0
Teacher H	6	12	10	3
Teacher J	7	9	7	2
Teacher K	7	5	5	0
Teacher L	6	3	3	0
Teacher M	3	1	4	0
Total	79	74	60	7 Total 220
	(35.9%)	(33.6%)	(27.3%)	(3.2%) (100%)

Table 4

Frequency of A Priori Codes for Each Teacher Aligned to Magana's T3 Framework for RQ1

Teacher code	T1: Translational	T2: Transformational	T3: Transcendent
Teacher A	4	0	0
Teacher B	7	1	0
Teacher C	5	1	0
Teacher D	2	4	0
Teacher E	3	1	0
Teacher F	3	3	0
Teacher G	6	0	0
Teacher H	3	2	0
Teacher J	5	4	1
Teacher K	10	2	0
Teacher L	5	0	0
Teacher M	4	0	0
Total	57	18	1 Total 76
	(75.0%)	(23.7%)	(1.3%) (100%)

Concrete experiences. I coded 79 text segments with the a priori code concrete experiences. The code occurred 26.7% (79/296) compared to the total number of text segments I coded. All of the text segments coded as concrete experiences aligned with Kolb's (1984) idea that to learn, one must fully engage in experiences with an open mind. The code was found across all 12 participants. In level 2 coding, I further categorized the 79 text segments with five emergent codes and visually represented the codes by the highest coded T3 framework level teachers shared, shown in Table 5.

Table 5

Code Frequency for Concrete Experiences Emergent Codes and Highest Coded T3 Framework Level for Each Teacher for RQ1

Level of T3	Teacher code	Technology integration support and implementation	Support for instructional shifts	Professional growth	Outside perspectives and shared experiences	Feedback and reflection	Total (*N*=79)
T1: Translational	Teacher A	0	1	0	1	0	
	Teacher M	0	1	1	0	1	
	Teacher L	1	4	1	0	0	
	Teacher G	3	1	0	2	1	18 (22.8%)
T2: Transformational	Teacher B	3	1	0	0	0	
	Teacher C	3	1	0	1	1	
	Teacher H	2	0	3	0	1	
	Teacher K	2	2	3	0	0	
	Teacher E	2	3	2	2	0	
	Teacher D	4	3	3	0	0	
	Teacher F	5	4	2	1	0	54 (68.3%)
T3: Transcendent	Teacher J	1	2	1	3	0	7 (8.9%)
	Total	26 (32.9%)	23 (29.1%)	16 (20.2%)	10 (12.7%)	4 (5.1%)	

Technology integration support and implementation was the most represented emergent pattern for a priori code concrete experiences (26/79, 32.9%) and was represented in codes of 10 out of the 12 teachers interviewed. In their interviews, teachers felt supported with implementing technology in meaningful and purposeful ways and that their coaches' facilitation of technology integration and support with technology tools

were the most useful components of individualized virtual coaching for blended learning implementation. I will discuss each in separate paragraphs below.

Teachers were open and felt supported to implement technology in meaningful and purposeful ways. Two teachers described how meaningful implementation of technology tools felt impactful on students' learning. When describing her feelings about technology use in the classroom, Teacher H shared the purpose of technology as a means for "reaching the goals of the lesson and differentiating for [her] students." She emphasized that technology should be about students engaging in "just right learning for them." Additionally, she shared her openness to technology and the role it plays in her classroom by saying "it is part of my classroom just like pencils…and markers…and paint." Similarly, Teacher C described technology as a "tool for learning…[and] a great resource to help all students" and that technology should be used to "help [students] in the best way that they can learn." In addition to teachers' beliefs and openness to implementing technology in meaningful ways, teachers shared purposeful ways they integrated new technology tools. Teachers B, D and G shared using various digital assessment tools, like Socrative, Kahoot, iReady, and Quizlet as ways to purposefully assess students' understanding and integrate technology in their classrooms. Using a different tool, Teacher F described how she used Flipgrid to allow students to work on their "communication skills in a different way." She went on to say "technology does play such an important role and it will continue to play a role in the world they're living in."

Virtual coaching for blended learning implementation was useful for supporting technology integration. Coach support positively impacted teachers' implementation of technology in the classroom. Teacher D shared how support from her coach made the integration of technology into her classroom "seamless" and not intimidating. She mentioned that she "felt like I can do this" after her coach provided support for implementing technology in the classroom. When referencing her coach, she shared, "she was a guide and an advisor, and a teacher of technology and blended learning." Teacher C shared a similar experience by saying it was "very helpful to implement the blended learning by talking to someone," especially when working on building out new units which included technology; however, she did mention that her use of technology after receiving coaching had not changed. She still looks for ways to help "students learn the same content [in] their own individual ways." Four teachers, Teachers D, E, K, and J described their excitement about trying new technology tools with their students. Teacher J said, "I love technology. I wish I could put a device in every child's hand." Teacher E shared, "it has been really fun and exciting trying to find new ways to engage my students through technology." Although teachers found support for technology integration useful, other factors impeded teachers from fully engaging in coaching for blended learning implementation. Three teachers named limited access to internet and one-to-one devices and non-functioning devices as negatively impacting their experiences. For example, Teachers B and F shared having an initial lack of one-to-one devices for classroom use during virtual coaching. However, Teacher B described that

once she got “one to one laptops…[she] was able to really dive deeper into blended learning, which was really new and engaging for the students.”

Support for instructional shifts was another emergent pattern for a priori code concrete experiences (23/79, 29.1%) and was represented in the codes of 11 out of the 12 teachers interviewed. Teachers shared about the usefulness of virtual coaching by mentioning coach support for the implementation of new student-centered strategies and for making transitions into new teaching roles. Teachers described learning about and implementing strategies for student choice, differentiation, student roles, self-assessment, goal setting, and project-based learning. While discussing the support provided by her coach, Teacher D mentioned that “I felt like I needed to have the kids much more actively involved in the differentiation of their learning.” Additionally, Teacher J described implementing student choice by saying she wanted students to have “the opportunity to be creative and use their choice.” When sharing about the coaching experience, Teachers A, E, and F shared the usefulness of their coaches sharing customizable, vetted strategies with them and how they customized those strategies based on their students and classroom context. Teacher E shared “there was just a great variety of strategies you could use that I wouldn’t have even thought of.” Teacher E shared that her coach pulled strategies from the partner organization’s platform for her based on her coaching goals. Although teachers appreciated their coaches sharing strategies with them, they shared that exploring the partner organization’s platform on their own was not useful. Teacher D felt the structure of the online platform impeded coaching and that she “didn't utilize it to its potential.” Teachers also named limited time as a factor in

exploring the strategies on their own. Teacher K shared “I don't have time to go through the [partner organization’s] platform and all the information that's on there… I don't have time to sit there and find a strategy to use.” Along with support with strategies, teachers mentioned the helpfulness of virtual coaching for transitioning into new positions. Teacher B shared, “I was a new teacher when I started the [partner organization]. I was definitely open to any advice, tips, and ways to enhance my classroom.”

Another emergent pattern within the a priori code of concrete experiences was professional growth (16/79, 20.2%). Eight of the 12 teachers shared virtual coaching benefitted them by providing continued improvement through personalized support. When talking about the personalized support her coach provided, Teacher F shared “she really understands what I want to do with my classroom and the directions I want to take.” Similarly, Teacher D shared how virtual coaching is a more useful form of professional development than one-sized fits all models by saying, “it meets you exactly where you are.” Although teachers found the personalized support of coaches useful, teachers described challenges when there was a misalignment between the coach and teacher, and when teachers had to make an unexpected coach switch. When comparing her two coaches, Teacher M shared “I felt like [my first coach] was a really wonderful fit. The second coach was actually not such a good fit and I tried to make it work.” In addition to receiving personalized support from their coaches, three teachers discussed virtual coaching as a method for continued improvement. In their descriptions, Teacher E shared how virtual coaching has helped her “become a better educator” and be “open to

new ideas." Similarly, Teacher H shared virtual coaching "is a great way to continue to push myself and my teaching and help my students."

The fourth most prominent emergent pattern was outside perspectives and shared experiences (10/79, 12.7%) and was mentioned by six of the 12 teachers. Teachers described the usefulness of virtual coaching as gaining access to an outside perspective and getting to work with an individual with shared experiences. For instance, Teacher F shared gaining an outside perspective was one of the reasons she opted into participating in virtual coaching. She said, "I just thought somebody from the outside might have different points of view or ideas that I could bring to my classroom." Additionally, teachers described shared experiences as one reason coaching felt useful to them. Teacher A mentioned "I had a very positive experience. My coach actually did exactly what I did for the same amount of years." Furthermore, Teacher J shared how she had the opportunity to work with her coach for a second year, which allowed them to build on an existing relationship and the previous year's work.

Feedback and reflection were the least represented emergent pattern shared during the interviews (4/79, 5.1%). Four out of the 12 teachers interviewed shared how virtual coaching was useful for encouraging them to reflect on their instructional practices and in receiving feedback from an expert. For example, Teacher H described engaging with her coach in discussions about her teaching to improve her practice and reflecting on teaching moves observed on video. She really enjoyed "diving deep into [her] teaching and having a chance to discuss it with someone" who could provide feedback. Teacher F described the coaching process of reflecting on her own practice as having supported the

implementation of reflection strategies with the students in her classroom. And, Teacher M "loved the idea of having a coach who was there who [she] could talk to so frequently." However, Teacher C also described the frequency at which she met with her coach as not as useful. She noted the virtual coaching session cadence as not being as flexible as she would have liked.

Reflective observation. I coded 74 text segments with the a priori code reflective observation. The code occurred 25.0% (74/296) compared to the total number of text segments I coded. The text segments coded as reflective observation aligned with Kolb's (1984) idea that to learn individuals must describe their observations and reflections using multiple perspectives. The code was found across all 12 participants. In level 2 coding, I further categorized the 74 text segments with three emergent codes and visually represented the codes by the highest coded T3 framework level teachers shared, shown in Table 6.

Table 6

Code Frequency for Reflective Observation Emergent Codes and Highest Coded T3 Framework Level for Each Teacher for RQ1

Level of T3	Teacher code	Professional impacts on the teacher	Technology as a lever for instructional shifts	Impacts on students	Total (*N*=74)
T1: Translational	Teacher A	0	0	1	
	Teacher M	1	0	0	
	Teacher L	3	0	0	
	Teacher G	7	2	0	14 (18.9%)
T2: Transformational	Teacher B	1	6	0	
	Teacher C	1	3	4	
	Teacher H	6	4	2	
	Teacher K	3	2	0	
	Teacher E	4	2	1	
	Teacher D	2	4	0	
	Teacher F	4	1	1	51 (68.9%)
T3: Transcendent	Teacher J	4	0	5	9 (12.0%)
	Total	36 (48.7%)	24 (32.4%)	14 (18.9%)	

Professional impacts on the teacher was the most represented emergent pattern for a priori code reflective observation (36/74, 48.7%) and was represented in the codes of 11 teachers. Teachers shared about the usefulness of virtual coaching by mentioning opportunities for reflecting on their practice with the support from an expert coach and support for planning for strategy implementation. I will discuss the details of both in separate paragraphs.

Teachers found engaging in reflective practices with their coaches was a useful part of coaching and impacted them professionally. Teacher B shared how she engaged in reflection with her coach every session. When talking about the reflection process she shared it was "natural conversations built in from the coach." Similarly, Teacher G described engaging in "organic" reflection and feedback conversations with her coach. Teachers also found it useful to have the opportunity to reflect about their practice. For example, when referencing the coaching reflection process, Teacher D shared "I'm taking time to really look back at the lesson and see the things that went well and the things that I might want to shift the next time." Teacher G found reflection useful when her coach scribed as she debriefed on the strategy she implemented. She shared that it allowed her to talk and then revisit her reflections at a later time. She was able to use her "own words to drive our next steps together." Additionally, Teacher H shared how she video recorded her lessons and shared them with her coach for feedback while they "watched…and talk[ed] about them together." She found this useful because when she is teaching a lesson "it's really hard to see things from a more objective standpoint." She shared that coaching "is a great way to continue to push myself."

Teachers were professionally impacted by coaching support for planning for strategy implementation. Teacher C described her coach as an expert saying, "it was very helpful having someone that was a mentor kind of figure that's been teaching longer than me and has…tricks up her sleeves." When talking about the usefulness of coaching Teacher G shared "I think [coaching] was helpful to me because what I brought to the forefront was something that I knew I needed…[and] wanted to do but was really feeling very overwhelmed by." She went on to describe how the coaching conversations benefited and allowed her to think about the strategy ideas in the context of her students and classroom. Teacher J had a similar experience with her coach. She shared that she "was able to go to her [coach] with different issues going on and…could use [partner organization's platform] to go through and find different strategies that could help [her] solve problems in [her] classroom." Additionally, Teacher M described the most useful part of virtual coaching being "looking at a strategy" with her coach and having her coach "break it down," and then work together to plan the set-up in a way she would accomplish the goal. Teachers also described the usefulness of planning support for gamification, academic choice boards, and project-based learning. Teacher F mentioned using coaching to plan for the implementation of gamification. She described her face-to-face mentor, who also was receiving virtual coaching, utilizing another virtual coach to gather gamification strategies. Teacher F then "blended the feedback" from both coaches so she could gamify her classroom. Teacher D described the coaching support she received for planning academic choice boards. When talking about planning for the implementation of academic choice boards, she shared that the strategy "made a big

difference in the classroom and it was a huge change" in her instruction. Similarly, after receiving coaching support for strategy implementation, Teacher J mentioned "I hear from my administrator and…from other teachers [that] they've seen a huge growth in me." She shared that the strategies her coach supported her with have now "kind of blossomed and grown." Lastly, Teacher E described how the planning and implementation of a strategy she worked on with her coach was transferred and used by other teachers. She shared "our Project Lead the Way coach liked it so much that she told the rest of the school…a lot of people in my building now use [the strategy] with their students."

Technology as a lever for instructional shifts was another emergent pattern shared during the interviews (24/74, 32.4%) and was represented in the codes for eight out of the 12 teachers. Teachers shared about the usefulness of virtual coaching for instructional shifts via technology through multiple lenses. Teachers mentioned that coaching supported the incorporation of blended models and personalized learning, as well as management and learning engagement. I will discuss the details of both in separate paragraphs.

Teachers described virtual coaching as a lever for making instructional shifts, like incorporating blended models and personalized learning, using technology in their classrooms. When discussing her experience, Teacher C mentioned that coaching "encouraged [her] to make things through a blended learning style" and to use technology as a "resource that is a tool for learning." Similarly, Teacher D described how coaching opened her up to using technology for blended learning and helped her realize "you can

do this." For example, as she implemented an academic choice board with technology components, she observed her students "were more engaged…[and] often appropriately chose things [from the choice board] that spoke to their strength." Teachers also utilized technology to make instructional shifts for learning personalization. Teacher H described using technology as a lever for "helping put students even more at the center," whereas Teacher B described using iReady to personalize learning for students and to implement a station rotation model to provide differentiated instruction. Additionally, teachers used technology to encourage independent and collaborative work. Teachers D, K, and M used academic choice to encourage students to make "their own choices" and use "each other as the help and as the experts" (Teacher M). For independent work, Teacher C described using Nearpods in her blended learning classroom as a way to move between teacher-paced instruction and students working at their "own pace."

To enhance students' learning, teachers described using technology for making management and engagement shifts in their classrooms. Teacher H described being interested in using technology in her classroom but only "when it's really going to enhance learning" and it is not "just a substitute for a pen and paper." With three teachers mentioning it, Nearpod was a popular tool for managing instruction and engaging students. Teacher C described using the tool to design her instruction and to make learning more "interactive" for her students. Similarly, Teacher F used Nearpod to manage her instruction across three different classes and to include "different interactive features" in her instruction. Additionally, as a result of using technology in her

classroom, Teacher D shared that classroom management is “much easier” and students are more “engaged” in their learning.

Impacts on students was the least represented a priori code for reflective observation (14/74, 18.9%). Six of the 12 teachers shared how virtual coaching was useful in supporting them to implement strategies impacting students’ behavior and learning. For example, Teacher C shared that “it was very helpful for me to have that [partner organization] coach and have all those different resources…[and] to see my students progress as we went along through the different strategies.” Teacher C went on to share how she found talking to a coach helpful for implementing blended learning with her students. While talking about blended learning for differentiation, she mentioned that “I wasn't really sure how to go about actually introducing these students, at their own levels, to different things.” She was able to utilize her coach's support to implement self-reflection strategies to help students “stop and look at their work and figure out how to reflect upon…their learning.” In addition, teachers also described various strategies they worked on with their coaches and implemented with their students. The strategies shared by teachers can be categorized into two types of strategies: (a) classroom culture and (b) behavior. Classroom culture strategies focused on building independence, giving students a voice, and setting goals. For example, Teacher F described how she “needed to figure out the best way to teach [her students] jobs and…how to go about incorporating them.” With the support of her coach, she implemented a group roles strategy. After implementation she “saw kids that would normally be on the quieter side, less like a leader most of the time [become] leaders within their group…it kind of pulled them out

of their comfort zone." Similarly, Teacher H gave students more ownership by giving them the opportunity to design their classroom environment. She shared how her students talked about, designed, and "arranged the classroom." At the end of three months, the students provided feedback via a survey and discussed whether they liked the old or new classroom environment better. In addition to classroom culture strategies, one teacher, Teacher J, talked about the behavior strategies she implemented with her students. With support from her coach, Teacher J described setting up "a cool down corner so that [students] could remove themselves from the situation and go to a place where they felt safe…they could calm down, and then when they were ready, they could rejoin the group." The strategy became an integral part of her classroom culture.

Abstract conceptualization. I coded 60 text segments with the a priori code abstract conceptualization. The code occurred 20.3% (60/296) compared to the total number of text segments I coded. The text segments coded as abstract conceptualization aligned with Kolb's (1984) idea that to learn individuals must emphasize thinking and apply ideas and concepts in practice. The code was represented in text segments for all 12 participants. In level 2 coding, I further categorized the 60 text segments with four emergent codes and visually represented the codes by the highest coded T3 framework level teachers shared, shown in Table 7.

Table 7

Code Frequency for Abstract Conceptualization Emergent Codes and Highest Coded T3 Framework Level for Each Teacher for RQ1

Level of T3	Teacher code	Integrating technology	Differentiation	Personalization	Professional support	Total (*N*=60)
T1: Translational	Teacher A	1	1	0	0	
	Teacher G	1	0	0	1	
	Teacher L	1	2	0	0	
	Teacher M	1	3	0	0	11 (18.3%)
T2: Transformational	Teacher B	2	1	0	2	
	Teacher C	2	6	0	0	
	Teacher H	7	1	2	0	
	Teacher K	3	1	1	0	
	Teacher E	4	1	0	0	
	Teacher D	4	1	0	0	
	Teacher F	1	2	1	0	42 (70.0%)
T3: Transcendent	Teacher J	4	0	3	0	7 (11.7%)
	Total	31 (51.7%)	19 (31.6%)	7 (11.7%)	3 (5.0%)	

Coaching support for integrating technology into the classroom was the most represented emergent pattern for a priori code abstract conceptualization (31/60, 51.7%) and was represented in the codes of all 12 teachers. Teachers described the usefulness of virtual coaching for support with integrating new technology tools. Teacher D described the support from her virtual coach as shifting her thoughts around putting "technology into the lesson." She shared that she tried academic choice boards, and having students build their own Kahoot quizzes. When deciding if she will use technology in a lesson, she asks herself "where will the technology fit and what would be best for this particular unit?" Teachers also described their coaches sharing technology tools and helping them integrate them into the classroom. When talking about her virtual coach, Teacher B said my coach "definitely supported me with different tools that I had never even heard of that could not only engage my students, but really get that deeper level thinking." She listed Edpuzzle and Nearpod as two tools her coach supported her with. Teacher C shared "it was because of my virtual coach [that] I was introduced to Nearpod and I absolutely love

it." She shared that it allows her to build her own lessons and content, while making learning interactive for her students. She mentioned "I still use [it] today." Teacher J felt her coach was particularly "wonderful with different ideas for implementing technology." Teachers D and G used technology to assess students' understanding. For example, Teacher D described using Kahoot quizzes as a means of incorporating technology into her classroom. Teachers also described using digital tools, like Google Earth, Google Maps, and Flipgrid to support students with making connections with the outside world. For example, Teacher D and H described taking their students on virtual field trips and giving students an "immersive" experience (Teacher H). Using Flipgrid, a video recording platform, Teachers D described having students "send a message to a student who was sick." As supplements to their curriculum, Teachers J and K used technology apps with students. Teacher J described using digital tools on the human body to build out her STEAM curriculum, and Teacher K implemented a Hyperdoc, a document where students interact with links and activities, where her students could practice and build skills in mathematics.

Another emergent pattern within the a priori code of abstract conceptualization was differentiation (19/60, 31.6%). Ten of the 12 teachers shared how virtual coaching was useful in supporting them to use non-tech and tech strategies for differentiating instruction based on their students' needs. Teacher K described working with her coach to have students use self-reflection to determine which review centers for math would allow students to practice skills they had not mastered yet. Additionally, although Teacher M "did not believe" differentiation could effectively happen, she described how

her coach supported her with using choice boards in her classroom and how it enabled independence and customization of learning and instruction for her students. Similarly, Teacher C mentioned choosing particular technology tools for students in order to help them "showcase their learning style." For example, she described used "technology to help support [her students] and raise them to their peers' levels on certain things" and to help particular students "vocalize how they are feeling or their thoughts and expressions." To support her English Speakers of Other Language, ESOL, students, Teacher F used Flipgrid where her students would "respond in their native language" and she would utilize her dual language coach to make sure students were "on track" with their learning. With particular students, Teachers A, L, and M mentioned using technology to make audio accommodations. These accommodations included using technology to read text to students and students using text to speech to vocalize their learning.

The third most prominent emergent pattern was personalization (7/60, 11.7%) and was mentioned by four of the 12 teachers. Teachers described coaches supporting them to implement personalized strategies focused on mastery, and student voice and choice to increase students' ownership of their learning. Teacher H described using a goal setting strategy to help students set up and measure personalized goals. The strategy supported students in "working on goals towards mastery." Three teachers shared how they implemented choice boards and Genius Hour during coaching to personalize instruction for students. Teacher K described using choice board projects with students and having "some of [her] kids [take] the ideas that were just paper and pencil and turn them into something that was technology based." With support from her coach the previous year,

she trusted her students to do this “in an appropriate manner because [they'd] set up those boundaries and those relationships” in the classroom. Teacher J described wanting to implement Genius Hour with support from her virtual coach sharing her students were “fully capable of doing their own research and picking their own topic…they can be more self-driven.”

Professional support was the least represented emergent pattern shared during the interviews (3/60, 5.0%) and was mentioned by two teachers. The two teachers described the usefulness of coaching through two different lenses, confidence building and management. Teacher G described utilizing coaching to “get some validation” about the things she was trying in her classroom by showing “her [coach] classroom video” so she could see her in action. She felt this “was an element of bridging that distance gap” between coaching face-to-face and having a virtual coach. Teacher B described how her experience implementing technology strategies during coaching shifted her technology mindset and allowed her to use the technology concept in instruction and learning. She shared

> In the beginning, I definitely thought that technology could only successfully be used for students that were on grade level…the coaching aspect has shown me that it's for everyone. It's not just for those that are on grade level or above grade level, it can be used for every kid.

Through the management lens, Teacher B mentioned that the different tools she learned from her coach “make our jobs easier.”

Active experimentation. The a priori code active experimentation was the least represented code for Kolb's experiential learning theory with seven coded text segments. The text segments coded as active experimentation aligned with Kolb's (1984) idea that to learn individuals must apply concepts which influence change by solving future problems. The code was represented in text segments for four of the 12 participants and was represented in 2.4% (7/296) of the total coded text segments. In level 2 coding, I further categorized the 7 text segments with two emergent codes and visually represented the codes by the highest coded T3 framework level teachers shared, shown in Table 8.

Table 8

Code Frequency for Active Experimentation Emergent Codes and Highest Coded T3 Framework Level for Each Teacher for RQ1

Level of T3	Teacher code	Shift in instruction	Reflective practice	Total (*N*=7)
T1: Translational	Teacher A	0	0	
	Teacher G	0	0	
	Teacher L	0	0	
	Teacher M	0	0	0 (0.0%)
T2: Transformational	Teacher H	2	1	
	Teacher C	1	0	
	Teacher D	0	1	
	Teacher B	0	0	
	Teacher K	0	0	
	Teacher E	0	0	
	Teacher F	0	0	5 (71.4%)
T3: Transcendent	Teacher J	1	1	2 (28.6%)
	Total	4 (57.1%)	3 (42.9%)	

Shift in instruction was the most represented emergent pattern for a priori code active experimentation (4/7, 57.1%) and was represented in the codes of three teachers. Teachers described shifts in their instruction for future problem solving as a useful part of virtual coaching. For example, Teacher H described how coaching supported her in broadening what she thinks about technology and has pushed her to change her

instruction to get students “creating what we don't even know about yet.” She goes on to describe how using authentic experiences, like using Google Earth, has pushed her to think about how she teaches “social studies in 2019” through the use of technology. Teacher C, who made a transition to a new position, described how the development of her blended learning style during coaching supported her in creating a “virtual classroom” to accommodate her mobile classroom and to lessen the number of physical resources she needed to bring with her to classrooms. Lastly, Teacher J described utilizing incentive strategies from other strategy implementations during coaching to build out a system of self-regulation in her classroom, including a cool-down area.

Reflective practice was the least represented emergent pattern shared during the interviews (3/7, 42.9%) and was mentioned by three teachers. Two teachers, Teacher H and Teacher J, described how using video recording has supported them with being reflective about their instruction in continued ways. For example, Teacher J shared that she uses video recording outside of coaching to “put [herself] in their shoes and their perspective” and to make decisions about her instruction. Although Teacher D did not use video recording for reflection, she finds the reflective practices she learned during coaching and her master’s program supported her in seeing “the things that [she] might want to shift the next time [she does] that lesson.”

T1: Translational. I coded 57 text segments with the a priori code T1: Translational. The code occurred 19.2% (57/296) compared to the total number of text segments I coded. The text segments coded as T1: Translational aligned with Magana’s (2017) idea technology at its lowest level of value involves using digital tools to automate

a process or for students to consume information in a variety of ways (pp. 28-35). The code was represented in text segments for all 12 participants. In level 2 coding, I further categorized the 57 text segments using four emergent codes, shown in Table 9.

Table 9

Code Frequency for T1: Translational Emergent Pattern for RQ1

Teacher code	Digital automation	Consuming information	Support for using digital resources	Technology confidence	
Teacher A	3	1	0	0	
Teacher B	4	2	1	0	
Teacher C	3	2	0	0	
Teacher D	0	1	1	0	
Teacher E	2	1	0	0	
Teacher F	2	1	0	0	
Teacher G	3	1	1	1	
Teacher H	3	0	0	0	
Teacher J	3	2	0	0	
Teacher K	3	2	1	4	
Teacher L	3	1	1	0	
Teacher M	1	2	1	0	
Total	30 (52.6%)	16 (28.1%)	6 (10.5%)	5 (8.8%)	Total 57 (100%)

Digital automation and consuming information were the two highest emergent patterns for T1: Translational. In addition to the other codes for the a priori code T1: Translational, I used these two codes in combination with codes for T2: Transformational and T3: Transcendent to determine the highest level at which teachers implemented technology in their classrooms, as determined by the coded text excerpts for Magana's (2017) T3 framework. As these codes do not necessarily represent the usefulness of virtual coaching for blended learning implementation, I will not discuss them under RQ1 but instead I will address them under RQ2. The codes are included on Table 8 to accurately represent the total codes for T1: Translational from the 12 teacher interviews.

Support for using digital resources was an emergent pattern within the a priori code of T1: Translational (6/11, 54.5%). Six of the 12 teachers shared how virtual coaching was useful for blended learning with the implementation of digital resources in the classroom. For example, Teacher D described the "tech tool suggestions and using them in the classroom" as the most helpful part of coaching. She shared that she got to learn "how to use them" which helped her to "not [be] afraid" of using technology in her classroom. Teacher M shared how useful coaching was in supporting her with implementing strategies to grow students' skills with independently using digital tools during choice board activities. She shared that I was "figuring out ways for students to really independently use their laptops…to be able to use the choice board and…make their choices." Four other teachers described receiving support from their coaches for specific technology tools or resources. Teacher B described her virtual coach sharing digital tools, like Edpuzzle and Nearpod, with her to "engage" students and "really get that deeper level thinking." She embedded these tools into Schoology. Teacher L shared that her coach supported her with the implementation of a Hyperdoc. She described being "very hesitant about it," but that her coach "supported [her] using it in a way that was flexible to [her] context."

Technology confidence was another emergent pattern shared during the interviews (5/11, 45.5%) with only two teachers, Teacher G and K, sharing about building technology confidence while talking about implementing tools during virtual coaching. Teacher K was particularly technology confident when trying new technology tools. She described implementing new technology tools with students and "trying to

figure out how certain aspects worked" together during class. She also mentioned being the first in her building to use a document camera, Flipgrid, and Kahoot. Teacher G described a moment of panic when her technology-enabled activity could not work because of issues with the digital devices in a classroom, which reaffirmed for her that she used technology for instructional reasons more than she thought.

T2: Transformational. I coded 18 text segments with the a priori code T2: Transformational. The code occurred 6.1% (18/296) compared to the total number of text segments I coded. The text segments coded as T2: Transformational aligned with Magana's (2017) idea that the integration of technology leads to substantial change in the nature or impact of the task, or the role of the individual doing the task (p. 38). The code was represented in text segments for eight of the 12 participants. In level 2 coding, I further categorized the 18 text segments using three emergent codes, shown in Table 10.

Table 10

Code Frequency for T2: Transformational Emergent Pattern for RQ1

Teacher code	Student produced authentic evidence	Authentic learning	Authentic evidence
Teacher A	0	0	0
Teacher B	0	1	0
Teacher C	1	0	0
Teacher D	2	2	0
Teacher E	1	0	0
Teacher F	2	0	1
Teacher G	0	0	0
Teacher H	0	1	1
Teacher J	1	1	2
Teacher K	2	0	0
Teacher L	0	0	0
Teacher M	0	0	0
Total	9 (50.0%)	5 (27.8%)	4 (22.2%) Total 18 (100%)

Student produced authentic evidence was the most represented emergent pattern for a priori code T2: Transformational (9/14, 50.0%) and was represented in the codes of half of the teachers interviewed. Teachers shared how they used technology to support students in producing authentic evidence of their learning. Teachers C and F used Flipgrid, a video recording platform, to accommodate students' communication needs. Teacher F used Flipgrid in an authentic way to support her ESOL students. She would allow her students to use the tool "to respond in their native language" and would leverage her dual language coach to track students' understanding of the material. Similarly, Techer C used the tool with a gifted student who "got so frustrated [with writing] because his vocabulary [was] so advanced, but his handwriting [was] that of his actual age." She mentioned how her "coach helped [her] adapt the lesson for him using Flipgrid where he could then showcase his actual project instead of writing up a report." Four teachers described using technology with students during projects and presentations to produce authentic evidence of learning. Teachers D and K utilized academic choice boards to allow students to choose if and how they wanted to use technology for their projects. Teacher D described using academic choice boards with students to investigate online, produce authentic evidence, and showcase what they had learned during their research. When referencing her use of academic choice boards, Teacher K mentioned that "some of my kids took the ideas that were just paper and pencil and turned them into something that was technology based." She described that all aspects of the project were built around students making choices and producing authentic evidence. When discussing students making choices, she shared that "I could trust them to do that in an appropriate

manner because we've set up those boundaries and those relationships." Teachers E and J shared how they modified projects to allow students to make choices in their presentations. For example, Teacher E mentioned encouraging students to use different types of technology, whereas Teacher J shared ideas like "an infographic or a song or a video or…creating a habitat" for an ecosystem project her students were completing.

Another emergent pattern within the a priori code of T2: Transformational was authentic learning (5/14, 35.7%). Four of the 12 teachers shared ways students engaged in authentic learning through technology. All four teachers referenced engaging students in virtual field trips. Teachers D and H mentioned using Google Earth as a means for students to learn about a country and to "experience something without culturally appropriating." Teacher H went on to share that using Google Earth was a "really great way to have an immersive experience" without visiting the area. Although not with Google Earth, Teachers B, D, and J mentioned engaging students in virtual experiences. Teacher B described how she used technology to engage students in "virtual field trips, where we can walk through and get the kids outside of the classroom." Teachers D and J described students engaging with authentic audiences. For example, Teacher D described having students use Flipgrid to "send a message to a student who was sick." Although Teacher J had not yet her students engage in the activity, she expressed interest in receiving coaching support for implementing virtual pen pals where students produced "virtual letters" via video about current weather conditions and engaged in conversations with international students in the same grade level about weather.

Teachers described using coaching as a means for capturing authentic professional and student evidence. Teachers H and J shared about using video recordings of their teaching. For example, Teacher J observed video recordings for "self-reflection" and shared these with her virtual coach in order to drive discussion, feedback, and next strategies for implementation. Although Teacher F didn't use video recording, she described how reflecting with her own coach "helped [her] to see the benefit of what it could do for the students" and planned for the implementation of Flipgrid, a video recording platform, with her coach where students recorded their reflections and used these reflections at a later time to see "how their thought process had changed."

T3: Transcendent. Of all a priori codes, T3: Transcendent was the least represented code with one coded text segment. The text segment coded as T3: Transcendent aligned with Magana's (2017) idea that technology be used in an innovative way beyond what is normally expected in education and allows students to design learning experiences based in inquiry and entrepreneurship. The code was represented in a text segment for Teacher J and was in 0.3% (1/296) of the total coded text segments. In level 2 coding, I further categorized the text segment into the emergent pattern learning experiences shaped by students. In response to one of the interview questions, Teacher J shared how she was hoping to work with her coach to implement Genius Hour, a student-shaped learning experience, where students choose "their own research," pick "their own topic," and utilize digital resources to learn more about the topic and create digital products of their choice. Although she talked about implementing

this innovative idea with her 4th grade students, she hadn't yet tried it with her 2nd grade students prior to the interview but was in the process of seeking coach support.

Key Finding for Research Question 1

Results showed that K-5 teachers who engage in cognitive processing modes of concrete experiences, reflective observations, and abstract conceptualization and implement technology innovations at the T2: Transformational level found virtual coaching for blended learning implementation useful for gaining professional support for implementing technology tools and student-centered strategies focused on authentic learning and products, support for shifting instructional practices, and for engaging in reflective practices for professional growth. Based on the data, I concluded that the key finding related to RQ1 was that K-5 teachers found virtual coaching useful for shifting to blended learning when they were open to receiving support for implementing technology tools and student-centered strategies and could use their reflections to drive future implementations in the classroom.

Technology Level Influence on Teacher Perspectives

The second RQ was how does the level at which teachers use technology influence the perspectives of the virtual coaching support during blended learning implementation? I asked teachers to tell me about the role technology played in their classroom and about their current perspectives on integrating and using technology for teaching and learning. I used the highest coded level of technology innovation represented by the a priori codes for Magana's (2017) T3 framework from RQ1 to categorize the responses teachers shared for a priori codes for Kolb's (1984) experiential

learning theory, as shown in Table 11. As shown in the table, the codes from teachers implementing higher coded levels of innovation occurred across all four cognitive processing modes for Kolb's (1984) experiential learning theory.

Table 11

Code Frequency for Kolb's Experiential Learning Theory and the Highest Coded T3 Framework Level for Each Teacher

Level of T3	Teacher code	Concrete experiences	Reflective observation	Abstract conceptualization	Active experimentation	Total (*N*=220)
T1: Translational	Teacher A	2	1	2	0	
	Teacher M	3	1	4	0	
	Teacher L	6	3	3	0	
	Teacher G	7	9	2	0	43 (19.5%)
T2: Transformational	Teacher B	4	7	5	0	
	Teacher K	7	5	5	0	
	Teacher E	9	7	5	0	
	Teacher D	10	6	5	1	
	Teacher F	12	6	4	0	
	Teacher C	6	8	8	1	
	Teacher H	6	12	10	3	152 (69.1%)
T3: Transcendent	Teacher J	7	9	7	2	25 (11.4%)
	Total	79 (35.9%)	74 (33.6%)	60 (27.3%)	7 (3.2%)	

T1: Translational. The text excerpts coded as T1: Translational represented excerpts from teachers of how they implemented technology innovations at the digital automation and consumption levels. In the paragraphs below, I will discuss the digital automation and consumption technology innovations (Table 12) prior to discussing how the teachers' technology innovation levels impacted their perspectives on virtual coaching for blended learning implementation at the T1: Translational level.

Table 12

Code Frequency for T1: Translational Emergent Codes of Digital Automation and Consuming Information from RQ1

Teacher code	Digital automation	Consuming information	
Teacher A	3	1	
Teacher B	4	2	
Teacher C	3	2	
Teacher D	0	1	
Teacher E	2	1	
Teacher F	2	1	
Teacher G	3	1	
Teacher H	3	0	
Teacher J	3	2	
Teacher K	3	2	
Teacher L	3	1	
Teacher M	1	2	
Total	30 (65.2%)	16 (34.8%)	Total 46 (100%)

Teachers described using digital automations for a variety of reasons (30/46, 65.2%). To supplement their instruction, three teachers described using technology tools to automate classroom practices. Teacher G described having students use the iPad as a timer or stopwatch, whereas Teachers E and H shared how they had students use the device to capture images. For example, Teacher H described having her students use their iPads to take a picture of a leaf "and then us[ing] it to recreate that leaf in a scientific drawing." Teachers also described using digital tools for instructional management. Teacher J shared how using a digital slideshow allowed her to structure her lessons. She shared "we have a short introduction on the carpet and then I have my visuals for the step by step…at the end, I always try to bring it back with a conclusion, but I use my Promethean board." Additionally, two teachers, Teachers F and H, discussed using digital tools to automate the home-school connection, including using technology to communicate with parents and "digital notes to cut down on the amount of paper" sent

home. Another way teachers used digital automations was for providing accommodations for students. Teachers A and C shared how they used "speech to text" for writing assignments and to "read aloud to the students" while other students engaged on their own with "the exact same article." Similarly, Teacher L used the LMS platform Schoology to implement an audio accommodation for her students. Lastly, teachers described digitally automating assessments for students. Teachers B and L described using Schoology for assessments. Teacher L mentioned that she had used Schoology as a way to assign "different quizzes or lessons to students" to differentiate learning. Similarly, two teachers shared programs they used to provide targeted materials based on continual assessment. Teacher B described using iReady to personalize learning, and Teacher K shared having students use the IXL program on their Chromebooks.

Teachers shared ways students digitally consumed information in their classrooms (16/46, 34.8%). Three teachers mentioned using digital tools for research. Teacher K described having her students use technology to conduct research and produce a product. Similarly, Teacher L shared how her students used Google Sites with vetted resources to support "research in a safe way." Using digital tools for content-focused station rotations was mentioned by Teachers B and J. To build out her curriculum, Teacher J found "apps about the human body and how the human body works" for engaging students in the content. Along with station rotations, teachers also used self-recorded videos for information consumption. Teacher M put instructional videos in choice board activities which freed her up to circulate during instruction. Instructional videos were also created when a teacher had a substitute in the classroom. Teacher B used Schoology to post a

step-by-step video instructing the students on their tasks. She found this allowed for the substitute teacher to "guide or answer any questions they might have" without having to teach the content and made it so "it's like I'm in the classroom." Lastly, Teachers C and F shared how they used Nearpod to create lessons for their students. Teacher F described using Nearpod as a way to include "different interactive features" in her lessons, while Teacher C used Nearpod to run teacher-paced and student-paced lessons. She went on to say that she feels "like a blended classroom is much more manageable…for teachers nowadays."

Through the lens of digital automation and consumption at the T1: Translational level, teachers described perspectives related to all levels of Kolb's (1984) experiential learning theory, except active experimentation, as shown in Table 13.

Table 13

Code Frequency for Kolb's Experiential Learning Theory and the Highest Coded T3 Framework Level for Each Teacher for RQ2

Level of T3	Teacher code	Concrete experiences	Reflective observation	Abstract conceptualization	Active experimentation	Total (*N*=220)
T1: Translational	Teacher A	2	1	2	0	
	Teacher M	3	1	4	0	
	Teacher L	6	3	3	0	
	Teacher G	7	9	2	0	43 (19.5%)

At the concrete experience mode, all four teachers, Teachers A, G, L, and M, shared about the usefulness of virtual coaching by mentioning coach support for instructional shifts, whereas not all teachers had text segments coded for the other four emergent codes (see Table 14). Although individual text segments are not represented in all emergent codes, all four teachers shared how coaching was useful for gaining access to expert coaches with outside experience and to grow professionally through reflective

practices. Although technology integration support and implementation were the most coded emergent code for concrete experiences across all technology innovation levels, at the T1: Translational level only two teachers, Teachers G and L, shared the usefulness of virtual coaching for technology integration support and implementation.

Table 14

Code Frequency for Concrete Experiences Emergent Codes and Highest Coded T3 Framework Level for T1: Translational Teachers From RQ1

Level of T3	Teacher code	Technology integration support and implementation	Support for instructional shifts	Professional growth	Outside perspectives and shared experiences	Feedback and reflection	Total (*N*=79)
T1: Translational	Teacher A	0	1	0	1	0	
	Teacher M	0	1	1	0	1	
	Teacher L	1	4	1	0	0	
	Teacher G	3	1	0	2	1	18 (22.8%)

Although T1: Translational teachers were open to involving themselves fully in coaching for making instructional shifts and professional growth, they were less likely to describe their observations and reflections using multiple perspectives. Three out of the four teachers reflected on being professionally impacted by coaching. As an example, Teacher G described engaging in "organic" reflection and feedback conversations with her coach. She also found it useful when her coach scribed as she debriefed on the strategy she implemented. She shared that it allowed her to talk and then revisit her reflections at a later time. She was able to use her "own words to drive our next steps together." The coded excerpts for technology as a lever for instructional shifts and impacts on students had minimal representation from teachers at this innovation level, as shown in Table 15.

Table 15

Code Frequency for Reflective Observation Emergent Code and Highest Coded T3 Framework Level for T1: Translational Teachers From RQ1

Level of T3	Teacher code	Professional impacts on the teacher	Technology as a lever for instructional shifts	Impacts on students	Total (*N*=74)
T1: Translational	Teacher A	0	0	1	
	Teacher M	1	0	0	
	Teacher L	3	0	0	
	Teacher G	7	2	0	14 (18.9%)

At the abstract conceptualization mode, teachers at the T1: Translational level emphasized thinking and applied ideas and concepts related to integrating technology and differentiation, whereas no teachers shared about using coaching for personalizing learning or instruction. Teacher G mentioned integrating technology for assessing the understanding of students. With particular students, Teachers A, L, and M mentioned using technology to make audio accommodations. These accommodations included using technology to read text to students and students using text to speech to vocalize their learning. Additionally, although Teacher M "did not believe" differentiation could effectively happen, she described how her coach supported her with using choice boards in her classroom and how it enabled independence and customization of learning and instruction for her students (Table 16).

Table 16

Code Frequency for Abstract Conceptualization Emergent Codes and Highest Coded T3 Framework Level for T1: Translational Teachers From RQ1

Level of T3	Teacher code	Integrating technology	Differentiation	Personalization	Professional support	Total (*N*=60)
T1: Translational	Teacher A	1	1	0	0	
	Teacher G	1	0	0	1	
	Teacher L	1	2	0	0	
	Teacher M	1	3	0	0	11 (18.3%)

T2: Transformational. Teachers at the T2: Transformational level differed from teachers who only described technology innovation for digital automation and consumption in a few ways. At the T2: Transformational innovation level and concrete experiences mode, there were a higher number of text excerpts from teachers focused on support for technology integration and implementation, making instructional shifts, and professional growth than teachers at the T1: Translational level (Table 17). Additionally, teachers at the T2: Transformational level found coaching less useful for gaining outside perspectives with shared experiences and engaging in reflective practices than those teachers at the T1: Translational level.

Table 17

Code Frequency for Concrete Experiences Emergent Codes and Highes Coded T3 Framework Level for T2: Transformational Teachers From RQ1

Level of T3	Teacher code	Technology integration support and implementation	Support for instructional shifts	Professional growth	Outside perspectives and shared experiences	Feedback and reflection	Total (*N*=79)
T2: Transformational	Teacher B	3	1	0	0	0	
	Teacher C	3	1	0	1	1	
	Teacher H	2	0	3	0	1	
	Teacher K	2	2	3	0	0	
	Teacher E	2	3	2	2	0	
	Teacher D	4	3	3	0	0	
	Teacher F	5	4	2	1	0	54 (68.3%)

Teachers at the T2: Transformational level described their observations and reflections using multiple perspectives when talking about the usefulness of virtual coaching for professional impacts and using technology as a lever for instructional shifts (see Table 18). Unlike at the T1: Translational level, all seven teachers at the T2: Transformational level shared examples of how coaching professionally impacted them and shared how coaching supported them to make instructional shifts with technology.

For example, two teachers shared about the usefulness of coaching for reflection. Teacher B shared how she engaged in reflection with her coach every session, whereas Teacher D shared "I'm taking time to really look back at the lesson and see the things that went well and the things that I might want to shift the next time." Teacher H described using technology as a lever for "helping put students even more at the center," whereas Teacher B described using iReady to personalize learning for students and to implement a station rotation model to provide differentiated instruction for students. Teachers at the T2: Transformational level also shared more examples of how coaching was useful for making impacts on students' learning than those teachers at the T1: Translational level.

Table 18

Code Frequency for Reflective Observation Emergent Codes and Highest Coded T3 Framework Level for T2: Transformational Teachers From RQ1

Level of T3	Teacher code	Professional impacts on the teacher	Technology as a lever for instructional shifts	Impacts on students	Total (*N*=74)
T2: Transformational	Teacher B	1	6	0	
	Teacher C	1	3	4	
	Teacher H	6	4	2	
	Teacher K	3	2	0	
	Teacher E	4	2	1	
	Teacher D	2	4	0	
	Teacher F	4	1	1	51 (68.9%)

All teachers at the T2: Transformational level mentioned the usefulness of coaching for integrating technology and implementing differentiation practices; however, unlike T1: Translational teachers, T2: Transformational teachers found coaching useful for incorporating personalization in their classrooms (Table 19). For example, teachers described coaches supporting them to implement personalized strategies focused on mastery, and student voice and choice to increase students' ownership of their learning. Teacher H described using a goal setting strategy to help students set up and measure

personalized goals. The strategy supported students in "working on goals towards mastery."

Table 19

Code Frequency for Abstract Conceptualization Emergent Codes and Highest Coded T3 Framework Level for T2: Transformational Teachers From RQ1

Level of T3	Teacher code	Integrating technology	Differentiation	Personalization	Professional support	Total (*N*=60)
T2: Transformational	Teacher B	2	1	0	2	
	Teacher C	2	6	0	0	
	Teacher H	7	1	2	0	
	Teacher K	3	1	1	0	
	Teacher E	4	1	0	0	
	Teacher D	4	1	0	0	
	Teacher F	1	2	1	0	42 (70.0%)

Like Teacher J, the only teacher who had excerpts coded at the T3: Transcendent level, teachers at the T2: Transformational level shared how they applied concepts learned during coaching to influence future change in their classrooms. However, only three out of the seven teachers at this level had coded text for active experimentation (Table 20). In contrast, teachers at the T1: Translational level had no coded text segments showing application of instructional practices or technology innovations from their coaching experience.

Table 20

Code Frequency for Active Experimentation Emergent Codes and Highest Coded T3 Framework Level for T2: Transformational Teachers From RQ1

Level of T3	Teacher code	Shift in instruction	Reflective practice	Total (*N*=7)
T2: Transformational	Teacher H	2	1	
	Teacher C	1	0	
	Teacher D	0	1	
	Teacher B	0	0	
	Teacher K	0	0	
	Teacher E	0	0	
	Teacher F	0	0	5 (71.4%)

T3: Transcendent. The teacher who reached the T3: Transcendent level of technology innovation in her classroom had similarities and differences with teachers implementing technology at lower levels. Although Teacher J implemented technology for consumption and automation in her classroom, she utilized coaching to move beyond the T1: Translational level of technology innovation. She mentioned using coaching for professional and student impacts, technology integration, and personalization like other T2: Transformational level teachers, yet she moved beyond the T2: Transformational level of technology integration by incorporating opportunities for students to engage in inquiry design through student-driven authentic learning experiences and products. For example, although she mentioned already implementing the strategy with her fourth grade students, she described wanting to work with her coach to implement Genius Hour, a student-shaped learning experience, where students choose "their own research," pick "their own topic," and utilize digital resources to learn more about the topic and create digital products of their choice. Although one other teacher, Teacher H, whose highest coded level was T2: Transformational, had several text segments which were close to moving her beyond the T2 level, the innovative experiences she shared did not include examples of student-driven inquiry or entrepreneurship.

Key Finding for Research Question 2

Results showed K-5 teachers engaged in virtual coaching implement technology at the T2: Transformational level and those who implement higher levels of technology innovation, according to Magana's (2017) T3 framework, during blended learning implementation engage in higher modes of cognitive processing, as suggested by Kolb's

(1984) experiential learning theory, when utilizing coaching for making instructional shifts with or without technology which have professional and student impacts and when using technology for personalization. Based on the data, I concluded that the key finding related to RQ2 was that K-5 teachers who apply learnings from virtual coaching while implementing blended learning in the classroom leverage technology for personalization, student-designed learning opportunities, and for exploring and sharing solutions to problems beyond the classroom.

Discrepant Data

After coding all text excerpts, several patterns emerged which did not meet inclusion criteria for any of the a priori codes yet provided insight into the virtual coaching process for blended learning implementation. The four emergent discrepant patterns are: (a) felt comfortable, (b) felt connected, (c) constant support, and (d) flexibility. I will discuss all four in separate paragraphs below.

Seven out of the 12 teachers interviewed described feeling comfortable with their virtual coach. Teachers A and B described feeling “very comfortable” with their coaches. Teacher B shared that she felt open enough to vent about challenges she was encountering in her classroom. She shared that her coach “always reassured that you’re not the only one going through this” which made her feel “more comfortable in [her] teaching practice.” Teacher K felt like coaching was like talking with a “friend,” whereas Teacher G described her coach as “very warm” and supportive when she brought challenges or issues to her. Describing her coach as “super woman,” Teacher J saw her coach as a role model and was comfortable confiding in her and seeking “honest input

from her." Lastly, when talking about the difference between her coach and someone who evaluates her, Teacher H described feeling like she could be "vulnerable" with her coach and didn't "have to always pretend that [she had] every answer."

Along with feeling comfortable with their coaches, teachers felt connected. Teachers D and F felt like their coaches did a nice job of connecting. For example, Teacher F shared how her coach took "an interest in [her] and what [she's] doing" which helped build their connection. Teacher D shared that her coach "made [her] feel safe right away" allowing her to "open up." Although they did not mention feeling connected to their coaches, Teachers G and L did compare coaching to therapy. Teacher G shared that her coach felt "almost like a professional therapist" because her coach worked to establish trust. Although most teachers felt comfortable or connected to their coaches, three teachers described challenges when their original coaches left and a new coach was assigned. When talking about the coach switch, Teacher H described it being "a little bit challenging because [she] had really been excited about [her] first coach;" however, the switch "turned out to be great" and her "new coach was really awesome." In contrast, Teacher M shared that she really enjoyed her first coach and felt like her second coach "was actually not such a good fit."

Teachers also described feeling supported and encouraged by their coaches. When talking about her coach, Teacher J shared how her coach was "very encouraging" and "always very positive." Likewise, Teacher F described feeling a "constant support" from her coach who helped her navigate the ups and downs of implementing blended learning. Phrases like "you got this, and you can do it, and I know you can" supported

Teacher H in feeling like her coach was “always completely supportive” and made her “feel valued.”

Coach participants described the flexibility of scheduling their coaching sessions. When scheduling and moving meetings, Teachers C, B, and L described their coaches as “very flexible” and “adaptable.” For example, Teacher B shared that “if I had something going on she understood, and we were able to reschedule.” Although Teacher L described her coach as being very flexible, she shared that the frequency of the meetings made coaching difficult because of the “time commitment.” Similarly, with an already full plate, Teacher J described that coaching took “a lot of extra time,” even though she found coaching beneficial.

Summary

The key findings for the study were based on the two RQs and the emergent patterns from each a priori code. Based on the data, I concluded that the key finding related to RQ1 was that K-5 teachers, at the concrete experiences, reflective observations, and abstract conceptualization cognitive processing modes and at the T2: Transformational level of technology innovation found virtual coaching for blended learning implementation useful for gaining professional support for the implementation of technology tools and student-centered strategies focused on authentic learning and products, support for shifting instructional practices, and for engaging in reflective practices for professional growth. For example, teachers often named the personalized and experienced support of their coaches as useful, including gaining access to vetted resources, new technology tools, and having an opportunity to reflect with someone who

gave objective feedback to support their continued growth. The key finding related to RQ2 was that the majority of K-5 teachers engaged in virtual coaching implement technology at the T2: Transformational level and those who implement higher levels of technology innovation, according to Magana's (2017) T3 framework, during blended learning implementation engage in higher modes of cognitive processing, as suggested by Kolb's (1984) experiential learning theory, when utilizing coaching for making instructional shifts with or without technology which have professional and student impacts and when using technology for personalization. For example, teachers at the T3: Transcendent level mentioned using coaching for learning more innovative models of instruction, like Genius Hour, versus those at the T1: Translational level who asked for support with implementing technology tools, like Kahoot, or one-off technology-based strategies. Additionally, teachers at the T2: Transformational and T3: Transcendent levels were able to observe, reflect, apply, and extend concepts they engaged in during virtual coaching. In Chapter 5, I discuss interpretations of the findings, limitations of the study, recommendations, implications, and conclusions.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this basic qualitative study was to explore the perspectives of elementary teachers on the usefulness of individualized virtual coaching in supporting their blended learning implementation. I explored RQs focused on understanding the perspectives of elementary teachers on the usefulness of individualized virtual coaching to support their blended learning implementation and how the level at which teachers use technology influences their perspectives of virtual coaching. This study was conducted to expand upon the use of virtual coaching for differentiated professional development to determine if and how virtual coaching supports blended learning implementation, and whether this innovation provides quality differentiated professional development for educators.

Interpretation of the Findings

The perspectives of elementary teachers who have received individualized virtual coaching to support their blended learning implementation were viewed through Kolb's (1984) experiential learning theory and Magana's (2017) T3 framework. Some of the findings from the current study confirm, disconfirm, or extend the findings from the literature. I interpreted these results using the research literature by RQs.

Usefulness of Virtual Coaching for Blended Learning Implementation

RQ1: What are elementary teacher perspectives on the usefulness of individualized virtual coaching to support their blended learning implementation? Key Finding 1 was that K-5 teachers found virtual coaching useful for shifting to blended

learning when they were open to receiving support for implementing technology tools and student-centered strategies and could use their reflections to drive future implementations in the classroom. With a lack of previous research focused on the perspectives of elementary teachers on virtual coaching, especially for blended learning implementation, the findings from this study confirm, extend, and fill gaps in the published empirical research.

One conclusion which came from the data related to this RQ was teachers found virtual coaching useful for implementing technology tools and student-centered strategies for authentic learning. In a review of the literature on technology tool implementation, the perspectives of teachers were limited. Although researchers reported elementary teachers using digital programs like CORE5 for reading assessments (Kazakoff et al., 2018; Macaruso et al., 2019; Prescott et al., 2018; Schechter et al., 2015), digital textbooks for literacy instruction (Al-Madani, 2015), and using devices to run flipped classrooms (Aidinopoulou & Sampson, 2017) and station rotation models (Truitt & Ku, 2018), the usefulness of these tools was not gathered through qualitative research design, and the implementation was not supported by a coach. In this study, elementary teacher perspectives about implementing technology tools, across Kolb's (1984) experiential learning theory cognitive processing modes, while participating in virtual coaching were shared, which fills gaps in the literature. In current literature, teacher perspectives were shared about the utilization of technology tools for engaging and motivating students and providing differentiated and personalized instruction. For example, two studies found teachers reported increased student engagement and motivation, and positive teacher

perspectives about students' interest in engaging in technology in kindergarten through fifth grade classrooms (Prouty & Werth, 2015; Shelton & Parlin, 2016). These findings were confirmed by my study. Although not based on the perspectives of teachers or as a result of coaching support, elementary teachers have been reported using technology for individualized learning and differentiated instruction (Darling-Aduana & Heinrich, 2018; Jones, 2017). My study confirms elementary teachers effectively use technology for individualized learning and differentiation and extends the previous literature as teachers discussed utilizing coaching support and technology tools to implement student-centered strategies for differentiation and personalization in the elementary classroom. Lastly, in the literature, one study mentioned elementary students using AR technology in conjunction with blended learning during a science unit; however, teacher perspectives were not shared on the usefulness of the tool in the classroom (Chen et al., 2017). The data from my study confirms that AR tools are useful in elementary classrooms and extends the previous study by sharing how elementary teachers found virtual coaching useful for implementing authentic learning through technology in the blended learning classroom.

Another conclusion from my study addressing Key Finding 1 was teachers found coaching useful for supporting shifts in instructional practices during blended learning implementation. In the literature, preschool and special education teachers participating in BIE coaching reported coaching as useful for building targeted instructional practices (Coogle et al., 2018; Scheeler et al., 2018). My study confirms virtual coaching as a means of shifting instruction in targeted ways and extends the findings to web-based

virtual coaching with blended learning implementation and the elementary population. Although teacher perspectives on the usefulness of video-based coaching were not well studied for elementary teachers, the literature reported the utilization of video-based coaching as a useful way to capture video of teaching practice for shifting instruction. The findings of my study confirmed the usefulness of video for shifting teachers' practices and add to the understanding of the gap through the gathering of elementary teachers' perspectives on the utilization of video to shift instruction during web-based coaching for blended learning implementation.

The final conclusion for Key Result 1 is that teachers found virtual coaching for blended learning implementation useful for engaging in reflective practices for professional growth, which confirmed and extended the literature. While literature highlighted this theme in video-based coaching with instructional coaches and K-8 teachers (Baker et al., 2017; Shewell, 2014), and in web-based coaching with principals (Ermeling et al., 2015; Lewis & Jones, 2019), the results of my study indicate that it might also be true with K-5 elementary teachers engaged in web-based coaching for blended learning implementation. For example, current literature shared that reflection was an important and integral part of the coaching process which provided targeted support for coaches and teachers (Bradley et al., 2013; Shewell, 2014) and allowed for teachers and coaches to collaboratively view and engage in reflective practices (Baker et al., 2017; Knight et al., 2018) through reflective protocols (Bradley et al., 2013). This may highlight new understanding about the perspectives of elementary teachers while participating in virtual coaching for blended learning implementation and may mean

reflective practices are a key component of engaging in instructional shifts, as suggested by Kolb's (1984) experiential learning theory.

Technology Level Influence on Teacher Perspectives

RQ2: How does the level at which teachers use technology influence the perspectives of the virtual coaching support during blended learning implementation? Key finding 2 was that K-5 teachers who apply learnings from virtual coaching while implementing blended learning in the classroom leverage technology for personalization, student-designed learning opportunities, and for exploring and sharing solutions to problems beyond the classroom. With a lack of previous research on virtual coaching utilizing Magana's (2017) T3 framework and Kolb's (1984) experiential learning theory, my study contributes to new understanding about technology innovation and cognitive processing when focused on elementary teachers engaging in virtual coaching for blended learning implementation. The conclusions which came from the data related to this RQ were teachers at the T2: Transformational level or higher found virtual coaching supportive for making instructional shifts with or without technology which have professional and student impacts and when using technology for personalization. These themes had not previously been identified in the literature. A possible reason for this is at the time of the study, empirical literature on Magana's T3 framework was not published. Although no empirical literature had been published, in Magana's (2017) book *Disruptive Classroom Technologies: A Framework for Innovation in Education* information is shared which further explains why teachers may have shared perspectives around virtual coaching being supportive for positively impacting students and personalization. For

example, the T2: Transformational level focuses on production and contribution, which "reflect[s] the way technology can be used by students to positively disrupt translational technology use and enact transformation technology use" (p. 41). As Magana shares, at the T2: Transformational level the "locus of control" for both learning and cognitive load shifts from the teacher to the students (p. 41), which may inform the focus on professional growth and student impacts. When examining Key Result 2 from the lens of teachers at the T2: Transformational level, their implementation of technology innovation at this higher level may be in alignment with the cognitive processing modes of reflective observation and abstract conceptualization as teachers are able to describe their observations and reflections using multiple perspectives and apply ideas and concepts in practice, which may connect to the emergent themes (see Kolb, 1984). Therefore, my study extends what is known about elementary teachers' perspectives on virtual coaching while implementing blended learning.

Limitations of the Study

Limitations to the trustworthiness and transferability of the findings of my study included the research design used, the amount of time between the end of coaching and the interview, the amount of time a participant had engaged in coaching and accessing participants to engage in the interview process.

The limitations of my study are related to the use of a basic qualitative research design. In using a basic qualitative study design to collect data from peoples' experiences to understand the interpretations of those experiences (Merriam & Tisdell, 2016), this research design may have unintended limitations. First, in my study, my role at the

partner organization as a manager was not connected to potential participants in my study; however, my experience virtually coaching middle and high school teachers and my personal implementation of blended learning in the classroom may have added an unintended limitation to my study. In Chapter 3, I described the strategies I used to address and mitigate my potential bias. The strategies I utilized were theoretical triangulation, member checks, and reflective journaling. During data analysis, I used theoretical triangulation with two conceptual frameworks, Kolb's (1984) experiential learning theory and Magana's (2017) T3 framework. By using the frameworks, I was able to conduct a deeper data analysis while looking at the data through two different lenses which lessened the impacts my personal biases had on the analysis. In addition to using a priori codes during data analysis, I conducted member checks with the 12 interviewed teachers to confirm and validate the transcriptions prior to data analysis. I also used reflective journaling to document assumptions about the data and to examine my interpretations in comparison to the theoretical frameworks. A second limitation to the research design is that only one semistructured individual interview was conducted with each participant. As a result, this research design may have limited the details shared in teachers' perspectives when compared to those interviews conducted later in the process.

Another limitation of my study is related to the limitations of time. First, teachers who participated in my study had a 6-month gap between when they ended coaching and the time they were interviewed for the study. As a result, they may have inadvertently forgotten experiences or shared perspectives based on their current experiences instead of

those experienced during their participation in virtual coaching for blended learning implementation. Second, since the inclusion criteria of my study did not limit participation in the study based on only participating in one year of virtual coaching, several participants had participated in more than one year of coaching. Due to having a mix of individuals who have participated in virtual coaching for various amounts of time, this may limit the transferability of the findings of my study.

The third limitation is related to the participants. First, during the recruitment phase of the process, access to potential participants to engage in the interview process came in phases due to the partner organization needing to obtain permission from school districts to contact teachers who met the inclusion criteria prior to distributing the information to me. Although all potential participants were eventually contacted on the spreadsheet, some participants received reminder emails before other participants received their first email invitation. Due to this unexpected complexity during the recruitment process, a majority of participants whose districts gave permission for their teachers to be contacted earlier in the recruitment process were included in the interview process than those where permission was granted at a later time. Second, all interviews with participants were conducted virtually, which may have limited the descriptive perspectives of the participants and may have impacted which potential participants opted into participating in the study.

Recommendations

Recommendations for further research are based on study results and limitations of the study. As my study was one of the first to examine K-5 teachers' perspectives

while engaging in virtual coaching for blended learning implementation, I recommend that additional studies with elementary teachers are conducted to confirm and disconfirm the findings. In addition to further exploring K-5 teachers' perspectives, I recommend that studies on this topic be conducted with preschool, 6-8, and 9-12 teachers to gather perspectives on the usefulness of virtual coaching for blended learning implementation beyond the elementary population. Therefore, more research needs to be conducted on the perspectives of teachers at various grade levels to build a deeper understanding of teachers' perspectives of virtual coaching for professional growth and shifts when implementing blended learning.

The second recommendation is related to RQ1 and RQ2 and the research design used in my study. With my study, the purpose behind choosing a basic qualitative research design was to capture the perspectives of elementary teachers on the usefulness of virtual coaching for blended learning implementation and not on the investigation of a "phenomenon in depth and within its real world context" (Yin, 2014, p. 16) or to provide a "detailed and rich story about a person, organization…or program" (Patton, 2015, p. 259). However, after conducting my study and learning about the role cognitive processing modes and the level at which teachers innovate with technology impacts their perspectives on virtual coaching for blended learning implementation, I recommend that a richer story about those perspectives be examined through a case study research design with the elementary teaching population in order to gain a clearer and more objective picture of teachers' perspectives. To capture a clearer and more objective picture of virtual coaching for blended learning implementation, I recommend that in addition to

capturing teachers' perspectives that future studies examine recorded coaching calls or engage in direct observations of virtual coaching sessions to provide a new layer of knowledge about the teachers' professional development experience.

The third recommendation is related to the key findings linked to RQ1 and RQ2. Prior to my study, neither conceptual framework explored the perspectives of elementary teachers on the usefulness of virtual coaching for blended learning implementation. Based on what was learned during my study, I recommend that additional studies utilize Kolb's (1984) experiential learning theory and Magana's (2017) T3 framework separately in order to gather a deeper understanding of the shifts in cognitive processing modes for K-5 teachers engaging in virtual coaching for blended learning implementation and the shifts between the levels of technology innovation implemented by K-5 teachers for blended learning implementation during virtual coaching. Therefore, more research needs to be done using the conceptual frameworks as individual and combined entities at various grade levels to gain a deeper understanding of how cognitive processing modes and the levels at which teachers implement technology innovation impact the perspectives of teachers when engaging in virtual professional development, like coaching. Additionally, I recommend further research be done with individuals who are currently engaging in virtual coaching at higher levels of cognitive processing and technology innovation to support teachers in shifting from T2: Transformational to T3: Transcendent levels. As my study showed, virtual coaching supports can shift technology innovation when participants are open to new experiences and learn from those experiences while implementing blended learning. With this in mind and knowing there

is a need for understanding the usefulness of differentiated professional development for blended learning, further research should focus on tailored support through virtual coaching for shifting levels of technology innovation in the classroom.

The last recommendation is related to the limitations of my study. The study was conducted with 12 K-5 teachers participating in virtual coaching for blended learning implementation in the United States and within one partner organization. Therefore, my study should be replicated with other virtual coaching companies and in various regions across the country to determine if results are similar. In addition, although I reached saturation with the 12 teachers interviewed, I would recommend conducting this study with a larger sample size in order to run a second round of interviews with participants at each of the technology innovation levels to gain a deeper understanding about how the technology innovation levels and cognitive processing modes impact their perspectives.

Implications

My study may contribute to positive social change in several ways, including at the individual, organizational, and societal levels. First at the individual level, the findings of my study contribute to positive social change by surfacing the usefulness of virtual coaching for blended learning implementation for K-5 teachers. The findings indicate virtual coaching may be a beneficial support for engaging K-5 teachers in higher levels of cognitive processing modes and higher levels of technology innovation through accessing blended experts with experiences and perspectives beyond the teachers' educational context. In previous empirical research on different types of virtual coaching, little information on the perspectives of teachers was shared about video-based coaching

or web-based coaching in relation to K-5 classrooms. The perspectives shared by K-5 teachers in my study indicate virtual coaching may serve as a beneficial and innovative form of professional development beyond one-sized-fits-all professional development for blended learning implementation in classrooms. These findings may have organizational impacts as well.

The second contribution which my study makes to positive social change is at the organizational level and is in relation to improved professional practice. The study indicates teachers found virtual coaching useful for gaining professional support for technology tool and strategy implementations, for making instructional shifts, and for reflecting on their practices and professional growth. Like previous empirical research, my study highlights the usefulness of providing targeted professional support through some level and type of coaching. Through teacher perspectives, the findings of my study also highlight the importance of providing access to digital devices and support with digital tools when shifting instructional practices and personalizing instruction in a blended learning model. Education stakeholders at district and learning leader levels who are looking to implement blended learning in their school systems and settings should seek professional development opportunities where K-5 teachers are provided differentiated and ongoing professional support based on teachers' needs and technology expertise, and provide the internal infrastructure and support to allow for blended learning to take place in classrooms.

The last contribution and implication of my study is that it may provide deeper understanding of the usefulness of virtual professional support at the societal level.

Research in higher education has indicated a growing need for differentiated support for blended learning implementation (Jonker et al., 2018; Margolis et al., 2017); however, prior to my study little was known about the professional needs of K-5 teachers when implementing blended learning. Although this particular study focuses solely on the perspectives of K-5 teachers at various technology innovation levels and how they view virtual coaching as a useful form of professional development, virtual coaching may serve as one avenue for providing the differentiated support K-5 teachers seek for implementing innovative teaching models like blended learning. As increasing numbers of districts, schools, and educational professionals implement technology-enabled models of instruction, virtual coaching may help fill this professional development need for professionals implementing blended learning in elementary classrooms in the United States.

Conclusion

The problem related to my study was that the usefulness of individualized virtual coaching as a differentiated professional development support for elementary teachers implementing blended learning is not well understood. The key finding for this basic qualitative study was that K-5 teachers at higher modes of cognitive processing and higher levels of technology innovation found virtual coaching useful for gaining professional support for the implementation of technology tools and strategies for learning authentication, for shifting instructional practices for student impacts, and for engaging in reflective practices for professional growth.

Blended learning, across grade levels and disciplines, continues to be a growing pedagogical practice in the field of education. As of 2017, an estimated 9 million students in the United States engage in some form of blended learning in school (Greene & Hale, 2017). With the growing use of this model in education, teachers are being asked to shift their instruction yet are often not provided the differentiated support they need to transition from face-to-face instruction to blended instruction (Jonker et al., 2018; Margolis et al., 2017; Porter, Graham, Bodily, & Sandberg, 2016). As a bridge for addressing this problem, my study provides a deeper understanding of what makes virtual professional development useful for elementary teachers. By providing evidence of virtual coaching as a usefulness form of differentiated and ongoing support for teachers implementing blended learning, education stakeholders working with K-5 educators can make informed decisions about whether this type of innovative and quality professional development can provide what educators need to grow their blended learning practice.

References

Aidinopoulou, V., & Sampson, D. G. (2017). An action research study from implementing the flipped classroom model in primary school history teaching and learning. *Educational Technology & Society, 20*(1), 237–247. Retrieved from https://www.j-ets.net/ETS/index.html

Allen, J. P., Hafen, C. A., Gregory, A. C., Mikami, A. Y., & Pianta, R. (2015). Enhancing secondary school instruction and student achievement: Replication and extension of the My Teaching Partner-Secondary intervention. *Journal of Research on Educational Effectiveness, 8*(4), 475–489. http://dx.doi.org/10.1080/19345747.2015.1017680

Al-Madani, F. M. (2015). The effect of blended learning approach on fifth grade students' academic achievement in My Beautiful Language Textbook and the development of their verbal creative thinking in Saudi Arabia. *Journal of International Education Research, 11*(4), 253–260. Retrieved from https://clutejournals.com/index.php/JIER

Amendum, S. J., Bratsch-Hines. M., & Vernon-Feagans, L. (2018). Investigating the efficacy of a web-based early reading and professional development intervention for young English learners. *Reading Research Quarterly, 53*(2), 155. Retrieved from https://ila.onlinelibrary.wiley.com/journal/19362722

Anthony, A. B., Gimbert, B., Fultz, D. M., & Parker, R. A. (2011). Examining the relationship between e-coaching and the self-efficacy of novice teachers seeking certification through alternative routes. *Journal of the National Association for*

Alternative Certification, 6(1), 46-64. Retrieved from https://www.alternativecertification.org/research-journal/

Arifin, F., & Herman, T. (2017). The influence of e-learning model web enhanced course to conceptual understanding and self regulated learning in mathematics for elementary school students. *TARBIYA: Journal of Education in Muslim Society, 4*(1), 45-52. http://dx.doi.org/10.15408/tjems.v4i1.5536

Artman-Meeker, K., Hemmeter, M. L., & Snyder, P. (2014). Effects of distance coaching on teachers' use of pyramid model practices: A pilot study. *Infants & Young Children*, *27*(4), 325-344. Retrieved from https://journals.lww.com/iycjournal/pages/default.aspx

Baker, D., Carter, C., Hagan, P., Hayles, T., Rhodes, R., & Smith, K. (2017). Replay, reflect, refine: Video-based coaching accelerates teacher growth. *Learning Professional, 38*(5), 40–44. Retrieved from https://learningforward.org/publications/jsd

Barton, E. E., Fuller, E. A., & Schnitz, A. (2016). The use of email to coach preservice early childhood teachers. *Topics in Early Childhood Special Education, 36*(2), 78–90. http://dx.doi.org/10.1177/0271121415612728

Barton, E. E., Pribble, L., & Chen, C. I. (2013). The use of e-mail to deliver performance-based feedback to early childhood practitioners. *Journal of Early Intervention*, *35*(3), 270-297. http://dx.doi.org/10.1177/1053815114544543

Barton, E. E., Rigor, M. N., Pokorski, E. A., Velez, M., & Domingo, M. (2018). Using text messaging to deliver performance feedback to preservice early childhood

teachers. *Topics in Early Childhood Special Education*, *39*(2),1-15. https://doi.org/10.1177/0271121418800016

Bergmann, J., & Sams, A. (2012). Before you flip, consider this. *Phi Delta Kappan*, *94*(2), 25. Retrieved from http://dx.doi.org/10.1177/003172171209400206

Benson, T., & Cotabish, A. (2014). Virtual bugs: An innovative peer coaching intervention to improve the instructional behaviors of teacher candidates. *SRATE Journal, 24*(1), 1-9. Retrieved from http://srate.org/journal.html

Blazar, D., Gilbert, B. J., Herlihy, C., & Gogolen, C. (2018). Using tablets to explore the potential for video-based classroom observations for research and professional development. *International Journal of Education in Mathematics, Science and Technology, 6*(2), 122-135. http://dx.doi.org/10.18404/ijemst.408935

Bradley, B. A., Harvey, S., Knight, J., Hock, M., Skrtic, T. M., Deshler, D., & Brasseur-Hock, I. (2013). Improving instructional coaching to support middle school teachers in the United States. *Educational design research–Part B: Introduction and illustrative cases*, 299-318. Retrieved from http://www.fusionreadingandlearning.com/uploads/4/8/1/0/48107765/ch15-1.pdf

Cain, T. (2007). Mentoring trainee music teachers: Beyond apprenticeship or reflection. *British Journal Of Music Education*, *24*(3), 281-294. http://dx.doi.org/10.1017/S0265051707007589

Carlson, J. A. (2010). Avoiding traps in member checking. *The Qualitative Report, 15*(5), 1102-1113. Retrieved from https://nsuworks.nova.edu/tqr/

Carmouche, M. L., Thompson, J. L., & Carter, L. S. (2018). Effects of professional development and videoconferencing on the increase of opportunities to respond and the on-task behavior of students with emotional behavior disorders. *Journal of Information Technology Education: Research*, *17*, 127-157. Retrieved from https://www.informingscience.org/Journals/JITEResearch/Overview

Chang, S. C., & Hwang, G. J. (2018). Impacts of an augmented reality-based flipped learning guiding approach on students' scientific project performance and perceptions. *Computers & Education*, *125*, 226–239. https://doi.org/10.1016/j.compedu.2018.06.007

Chen, C. H., Huang, C. Y., & Chou, Y. Y. (2017). Integrating augmented reality into blended learning for elementary science course. In *Proceedings of the 5th International Conference on Information and Education Technology* (pp. 68-72). ACM. http://dx.doi.org/10.1145/3029387.3029417

Christensen, R., & Knezek, G. (2017). Contrasts in openness toward mobile learning in the classroom: A study of elementary, middle and high school teachers. *International Association for Development of the Information Society*. Retrieved from http://www.iadisportal.org/whatiadis

Coleman, L. O., Gibson, P., Cotten, S. R., Howell-Moroney, M., & Stringer, K. (2016). Integrating computing across the curriculum: The impact of internal barriers and training intensity on computer integration in the elementary school classroom. *Journal of Educational Computing Research, 54*(2), 275-294. http://dx.doi.org/10.1177/0735633115616645

Coogle, C. G., Ottley, J. R., Rahn, N. L., & Storie, S. (2018). Bug-in-ear eCoaching: Impacts on novice early childhood special education teachers. *Journal of Early Intervention, 40*(1), 87-103. Retrieved from http://journals.sagepub.com/home/jei

Coogle, C. G., Rahn, N. L., & Ottley, J. R. (2015). Pre-service teacher use of communication strategies upon receiving immediate feedback. *Early Childhood Research Quarterly*, *32*, 105–115. http://dx.doi.org/10.1016/j.ecresq.2015.03.003

Coogle, C. G., Rahn, N. L., Ottley, J. R., & Storie, S. (2016). ECoaching across routines to enhance teachers' use of modeling. *Teacher Education and Special Education, 39*(4), 227-245. Retrieved from https://journals.sagepub.com/home/tes

Cooley, S. S., & De Gagne, J. C. (2016). Transformative experience: Developing competence in novice nursing faculty. *Journal of Nursing Education*, *55*(2), 96-100. http://dx.doi.org/10.3928/01484834-20160114-07

Dailey, D., & Robinson, A. (2016). Elementary teachers: Concerns about implementing a science program. *School Science and Mathematics 116*(3), 139. https://doi.org/http://dx.doi.org/10.1111/ssm.12162

Darling-Aduana, J., & Heinrich, C. J. (2018). The role of teacher capacity and instructional practice in the integration of educational technology for emergent bilingual students. *Computers & Education*, *126*, 417-432. http://dx.doi.org/10.1016/j.compedu.2018.08.002

de Aldama, C. C., & Pozo, J. I. (2016). How are ICT used in the classroom? A study of teachers' beliefs and uses. *Electronic Journal of Research in Educational Psychology, 14*(2), 253-286. http://dx.doi.org/10.25115/ejrep.39.15062

DeCuir-Gunby, J. T., Marshall, P. L., & McCulloch, A. W. (2011). Developing and using a codebook for the analysis of interview data: An example from a professional development research project. *Field Methods, 23*(2), 136-155. http://dx.doi.org/10.1177/1525822X10388468

Downer, J. T., Kraft-Sayre, M. E., & Pianta, R. C. (2009). Ongoing, web-mediated professional development focused on teacher-child interactions: Early childhood educators' usage rates and self-reported satisfaction. *Early Education and Development, 20*(2), 321–345. http://dx.doi.org/10.1080/10409280802595425

Ermeling, B. A., Tatsui, T. T., & Young, K. R. (2015). Virtual coaching for instructional leaders: A multi-method investigation of technology-enabled external assistance. *Teachers College Record*, *117*(11), 1-48. Retrieved from http://www.tcrecord.org/

Firdaus, S., Isnaeni, W., & Ellianawati, E. (2018). Motivation and learning achievement of primary students in theme-based learning using blended learning model. *Journal of Primary Education, 7*(3), 324-331. Retrieved from https://journal.unnes.ac.id/sju/index.php/jpe

Francis, J. J., Johnston, M., Robertson, C., Glidewell, L., Entwistle, V., Eccles, M. P., & Grimshaw, J. M. (2010). What is an adequate sample size? Operationalising data saturation for theory-based interview studies. *Psychology & Health*, *25*(10), 1229–1245. http://dx.doi.org/10.1080/08870440903194015

Frazier, D. K., & Trekles, A. M. (2018). Elementary 1:1 iPad implementation: Successes and struggles during the first year. *Journal of Educational Technology Systems*, *46*(4), 463–484. http://dx.doi.org/10.1177/0047239517737965

Green, L. S. (2014). Through the looking glass: Examining technology integration in school librarianship. *Knowledge Quest*, *43*(1), 36–43. Retrieved from https://knowledgequest.aasl.org/

Greene, K., & Hale, W. (2017). The state of 21st century learning in the K-12 world of the United States: Online and blended learning opportunities for American elementary and secondary students. *Journal of Educational Multimedia & Hypermedia*, *26*(2), 131–159. Retrieved from https://www.aace.org/pubs/jemh/

Gregory, A., Ruzek, E., Hafen, C. A., Yee Mikami, A., Allen, J. P., & Pianta, R. C. (2017). My Teaching Partner-Secondary: A video-based coaching model. *Theory Into Practice*, *56*(1), 38–45. https://doi.org/10.1080/00405841.2016.1260402

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough?: An experiment with data saturation and variability. *Field Methods*, *18*(1), 59–82. https://doi.org/10.1177/1525822X05279903

Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement.* New York, NY: Routledge.

Haystead, M., & Marzano, R. J. (2009) *Evaluation study on the effect of Promethean ActivClassroom on student achievement.* Centennial, CO: Marzano Research.

Haystead, M., & Marzano, R. J. (2010) *A second year evaluation study of Promethean ActivClassroom*. Centennial, CO: Marzano Research.

Hemmeter, M. L., Snyder, P., Kinder, K., & Artman, K. (2011). Impact of performance feedback delivered via electronic mail on preschool teachers' use of descriptive

praise. *Early Childhood Research Quarterly*, *26*(1), 96-109. Retrieved from https://www.journals.elsevier.com/early-childhood-research-quarterly

Hlásná, P., Klímová, B., & Poulová, P. (2017). Use of information and communication technologies in primary education - A case study of the Czech Republic. *International Electronic Journal of Elementary Education, 9*(3), 681-692. Retrieved from https://www.iejee.com

Hollett, N. L., Brock, S. J., & Hinton, V. (2017). Bug-in-ear technology to enhance preservice teacher training: Peer versus instructor feedback. *International Journal of Learning, Teaching and Educational Research, 16*(2). Retrieved from https://www.ijlter.org/index.php/ijlter

Hui, Y. K., Mai, B., Qian, S., & Kwok, L. F. (2018). Cultivating better learning attitudes: A preliminary longitudinal study. *Open Learning, 33*(2), 155–170. Retrieved from http://dx.doi.org/10.1080/02680513.2018.1454830

Hultgren, U., Palmer, S., & O'Riordan, S. (2016). Developing and evaluating a virtual coaching programme: A pilot study. *Coaching Psychologist*, *12*(2), 67–75. Retrieved from https://www1.bps.org.uk/publications/member-network-publications/member-publications/coaching-psychologist

Hwang, G. J., & Lai, C. L. (2017). Facilitating and bridging out-of-class and in-class learning: An interactive e-book-based flipped learning approach for math courses. *Educational Technology & Society, 20*(1), 184–197. Retrieved from https://www.j-ets.net/ETS/index.html

Jacob, S. A., & Furgerson, S. P. (2012). Writing interview protocols and conducting

interviews: Tips for students new to the field of qualitative research. *The Qualitative Report, 17*(42), 1-10. Retrieved from https://nsuworks.nova.edu/tqr/vol20/iss2/7

Jones, K. D., & Ringler, M. C. (2018). Preparing principal candidates to be instructional leaders through virtual coaching preservice teachers. *Journal of Research on Leadership Education*, 1-22. http://dx.doi.org/10.1177/1942775118771379

Jones, S. J. (2017). Technology in the Montessori classroom: Teachers' beliefs and technology use. *Journal of Montessori Research, 3*(1), 16-29. http://dx.doi.org/10.17161/jomr.v3i1.6458

Jonker, H., März, V., & Voogt, J. (2018). Teacher educators' professional identity under construction: The transition from teaching face-to-face to a blended curriculum. *Teaching and Teacher Education*, *71*, 120–133. https://doi.org/10.1016/j.tate.2017.12.016

Kazakoff, E. R., Macaruso, P., & Hook, P. (2018). Efficacy of a blended learning approach to elementary school reading instruction for students who are English Learners. *Educational Technology Research and Development, 66*(2), 429-449. http://dx.doi.org/10.1007/s11423-017-9565-7

Kennedy, A., & Lees, A. (2016). Preparing undergraduate pre-service teachers through direct and video-based performance feedback and tiered supports in early Head Start. *Early Childhood Education Journal*, *44*(4), 369–379. http://10.0.3.239/s10643-015-0725-2

Knight, D., Hock, M., Skrtic, T. M., Bradley, B. A., & Knight, J. (2018). Evaluation of video-based instructional coaching for middle school teachers: Evidence from a multiple baseline study. *Educational Forum, 82*(4), 425–442. https://doi.org/10.1080/00131725.2018.1474985

Knight, J. (2014). What you learn when you see yourself teach. *Educational Leadership*, *71*(8), 18–23. Retrieved from http://www.ascd.org/publications/educational-leadership.aspx

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development.* Englewood Cliffs, NJ: Prentice Hall, 1984.

Kumpulainen, K., Mikkola, A., & Jaatinen, A. M. (2014). The chronotopes of technology-mediated creative learning practices in an elementary school community. *Learning, Media & Technology, 39*(1), 53–74. https://doi.org/10.1080/17439884.2012.752383

Kunz, G. M., Nugent, G. C., Pedersen, J. E., DeChenne, S. E., & Houston, J. (2013). Meeting rural science teachers' needs: Professional development with on-going technology-delivered instructional coaching. Retrieved from http://r2ed.unl.edu/workingpapers/2013/2013_8_Kunz_Nugent_Pedersen_DeChenne_Houston.pdf

Lai, C. L., & Hwang, G. J. (2016). A self-regulated flipped classroom approach to improving students' learning performance in a mathematics course. *Computers & Education*, *100*, 126-140. Retrieved from https://www.journals.elsevier.com/computers-and-education

Lee, S. C., Nugent, G., Kunz, G. M., Houston, J., & DeChenne-Peters, S. (2018). Case study: Value-added benefit of distance-based instructional coaching on science teachers' inquiry instruction in rural schools. *Journal of Science Teacher Education, 29*(3), 179-199. Retrieved from https://link.springer.com/journal/10972

Leighton, C. M., Ford-Connors, E., Robertson, D. A., Wyatt, J., Wagner, C. J., Proctor, C. P., & Paratore, J. R. (2018). "Let's FaceTime tonight:" Using digital tools to enhance coaching. *The Reading Teacher*, *72*(1), 39. Retrieved from https://www.jstor.org/journal/readingteacher

Lewis, S., & Garret Dikkers, A. (2016). Profesional development supports for the blended, co-taught classroom. *Journal of Online Learning Research, 2*(2), 103-121. Retrieved from https://www.aace.org/pubs/jolr/

Lewis, T. E., & Jones, K. D. (2019). Increasing principal candidates' self-efficacy through virtual coaching. *Journal of Organizational and Educational Leadership, 4*(3), 1-19. Retrieved from https://digitalcommons.gardner-webb.edu/joel/

Liao, Y.-C., Ottenbreit-Leftwich, A., Karlin, M., Glazewski, K., & Brush, T. (2017). Supporting change in teacher practice: Examining shifts of teachers' professional development preferences and needs for technology integration. *Contemporary Issues in Technology and Teacher Education (CITE Journal)*, *17*(4), 522-548. Retrieved from http://www.citejournal.org/

Lim, E. M. (2015). The factors influencing young children's social interaction in technology integration. *European Early Childhood Education Research Journal, 23*(4), 545-562. http://dx.doi.org/10.1080/1350293X.2013.810484

LoCasale-Crouch, J., DeCoster, J., Cabell, S. Q., Pianta, R. C., Hamre, B. K., Downer, J. T., ... & LaParo, K. (2016). Unpacking intervention effects: Teacher responsiveness as a mediator of perceived intervention quality and change in teaching practice. *Early childhood research quarterly*, *36*, 201-209. http://dx.doi.org/10.1016/j.ecresq.2015.12.022

Magana, S. (2017). *Disruptive classroom technologies: A framework for innovation in education.* Thousand Oaks, CA: Corwin.

Magana, S., & Marzano, R. J. (2014). *Enhancing the art and science of teaching with technology.* Bloomington, IN: Solution Tree.

Macaruso, P., Marshall, V., & Hurwitz, L.B. (2019). Longitudinal blended learning in a low SES elementary school. In G. Marks (Ed.), *Proceedings of Global Learn 2019-Global Conference on Learning and Technology* (pp. 253-262). Princeton-Mercer, New Jersey: Association for the Advancement of Computing in Education (AACE). Retrieved from https://www.learntechlib.org

Marcovitz, D., & Janiszewski, N. (2015). Technology, models, and 21st-century learning: How models, standards, and theories make learning powerful. *Society for Information Technology & Teacher Education International Conference,* (pp. 1227-1232). Retrieved from https://www.aace.org/

Margolis, A. R., Porter, A. L., & Pitterle, M. E. (2017). Best practices for use of blended learning, *81*(3), 49. https://doi.org/10.5688/ajpe81349

Matsumura, L. C., Bickel, D. D., Zook-Howell, D., Correnti, R., & Walsh, M. (2016). Cloud coaching: Web-based learning holds promise, especially for districts with limited resources. *Journal of Staff Development*, *37*(4), 31–34. Retrieved from https://learningforward.org/publications/jsd

Matsunami, N., & Nagai, M. (2015). A trial and study on a flipped classroom using video learning materials for preparation at an elementary school in Japan. *In Society for Information Technology & Teacher Education International Conference* (pp. 406-411). Association for the Advancement of Computing in Education (AACE).

McDaniel, S. C., & Bloomfield, B. S. (2020). School-wide positive behavior support telecoaching in a rural district. *Journal of Educational Technology Systems*, *48*(3), 335–355. https://doi.org/10.1177/0047239519886283

McLeod, R. H., Kim, S., & Resua, K. A. (2018). The Effects of coaching with video and email feedback on preservice teachers' use of recommended practices. *Topics in Early Childhood Special Education*, *38*(4), 1-12. Retrieved from https://journals.sagepub.com/home/tec

Merriam, S. B., & Tisdell, E. J. (2016) *Qualitative research: A guide to design and implementation* (4th ed.). San Francisco, CA: Jossey-Bass.

Mishra, P., & Koehler, M. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, *108*(6), 1017–1054. http://dx.doi.org/10.1111/j.1467-9620.2006.00684.x

Nikolopoulou, K., & Gialamas, V. (2015). Barriers to the integration of computers in early childhood settings: Teachers' perceptions. *Education and Information Technologies, 20*(2), 285-301. http://dx.doi.org/10.1007/s10639-013-9281-

Nugent, G. C., Kunz, G. M., Houston, J., Kalutskaya, I., & Pedersen, J. (2017). The effectiveness of e-coaching in rural science classrooms. *Rural Education Research in the United States* (pp. 123-144). http://dx.doi.org/10.1007/978-3-319-42940-3_7

Ortlieb, E., Sargent, S., & Moreland, M. (2014). Evaluating the efficacy of using a digital reading environment to improve reading comprehension within a reading clinic. *Reading Psychology, 35*(5), 397–421. http://dx.doi.org/10.1080/02702711.2012.683236

Ottley, J. R. (2016). Real-time coaching with bug-in-ear technology. *Young Exceptional Children*, *19*(3), 32. https://doi.org/10.1177/1096250615576806

Ottley, J. R., Coogle, C. G., & Rahn, N. L. (2015). The social validity of bug-in-ear coaching: Findings from two studies implemented in inclusive early childhood environments. *Journal of Early Childhood Teacher Education, 36*(4), 342-361. http://dx.doi.org/10.1080/10901027.2015.1100146

Ottley, J. R., & Hanline, M. F. (2014). Bug-in-ear coaching: Impacts on early childhood educators' practices and associations with toddlers' expressive communication. *Journal of Early Intervention, 36*(2), 90–110. Retrieved from http://journals.sagepub.com/home/jei

Ottley, J. R., Piasta, S. B., Coogle, C. G., Spear, C. F., & Rahn, N. L. (2018). Implementation of bug-in-ear coaching by community-based professional development providers. *Early Education and Development*. *30*(3), 400-422. http://dx.doi.org/10.1080/10409289.2018.1545500

Patton, M. Q. (2015). *Qualitative research & evaluation methods: Integrating theory and practice* (4th ed.). Thousand Oaks, CA: Sage.

Percy, W. H., Kostere, K., & Kostere, S. (2015). Generic qualitative research in psychology. *The Qualitative Report, 20*(2), 76-85. Retrieved from https://nsuworks.nova.edu/tqr/vol20/iss2/7

Phirangee, K. (2013). Beyond the elementary classroom walls: Exploring the ways participation within web 2.0 spaces are reshaping pedagogy. *Journal of Educational Multimedia and Hypermedia, 22*(3), 299–316. Retrieved from https://www.aace.org/pubs/jemh/

Ploessl, D. M., & Rock, M. L. (2014). eCoaching: The effects on co-teachers' planning and instruction. *Teacher Education and Special Education, 37*(3), 191-215. http://dx.doi.org/10.1177/0888406414525049

Porter, W. W., Graham, C. R., Bodily, R. G., & Sandberg, D. S. (2016). A qualitative analysis of institutional drivers and barriers to blended learning adoption in higher education. *The Internet and Higher Education*, *28*, 17–27. http://dx.doi.org/10.1016/j.iheduc.2015.08.003

Powell, D. R., & Diamond, K. E. (2013). Implementation fidelity of a coaching-based professional development program for improving Head Start teachers' literacy

and language instruction. *Journal of Early Intervention, 35*(2), 102–128. Retrieved from https://journals.sagepub.com/home/jei

Powell, A., Watson, J., Staley, P., Patrick, S., Horn, M., Fetzer, L., ... & Verma, S. (2015). Blending learning: The evolution of online and face-to-face education from 2008-2015. Promising Practices in Blended and Online Learning Series. International association for K-12 online learning. Retrieved from ERIC database. (ED560789)

Prescott, J. E., Bundschuh, K., Kazakoff, E. R., & Macaruso, P. (2018). Elementary school-wide implementation of a blended learning program for reading intervention. *Journal of Educational Research, 111*(4), 497–506. https://doi.org/10.1080/00220671.2017.1302914

Prouty, C., & Werth, L. (2015). Student engagement: Best practices in a K-5 blended learning environment. *In Society for Information Technology & Teacher Education International Conference* (pp. 1717-1724). Association for the Advancement of Computing in Education (AACE). Retrieved from https://www.aace.org/

Purposeful sampling. (2013). In Emmel, N. *Sampling and choosing cases in qualitative research: A realist approach* (pp. 33-44). London: SAGE Publications Ltd. http://dx.doi.org/10.4135/9781473913882

Ramadan, K. (2017). What is blended learning? A multiple case study. *Literacy Information and Computer Education Journal, 8*(2), 2598-2605. Retrieved from https://infonomics-society.org/licej/

Ravitch, S. M., & Carl, N. M. (2016). *Qualitative research: Bridging the conceptual, theoretical, and methodological*. Thousand Oaks, CA: Sage.

Regan, K., & Weiss, M. P. (2020). Bug-in-ear coaching for teacher candidates: What, why, and how to get started. *Intervention in School & Clinic*, *55*(3), 178. Retrieved from https://journals.sagepub.com/home/isc

Rickels, D. A. (2016). The effect of synchronized video feedback on the teaching performance of preservice music teachers. *ISME Commission on Music in Schools and Teacher Education (MISTEC), 79*. Retrieved from https://www.isme.org/our-work/commissions-forum/music-schools-and-teacher-education-commission-mistec

Rieckhoff, B. S., Owens, R., & Kraber, B. (2018). Teaching in the 21st century: Perspectives from a Catholic university partnership. *Journal of Catholic Education, 21*(2), 182. http://dx.doi.org/10.15365/joce.2102082018

Rock, M. L., Schumacker, R. E., Gregg, M., Howard, P. W., Gable, R. A., & Zigmond, N. (2014). How are they now? Longer term effects of eCoaching through online bug-in-ear technology. *Teacher Education and Special Education*, *37*(2), 161-181. http://dx.doi.org/10.1177/0888406414525048

Rosen, Y., & Beck-Hill, D. (2012). Intertwining digital content and a one-to-one laptop environment in teaching and learning: Lessons from the Time to Know Program. *Journal of Research on Technology in Education, 44*(3), 225–241. Retrieved from https://www.tandfonline.com/loi/ujrt20

Ruggiero, D., & Mong, C. J. (2015). The teacher technology integration experience: Practice and reflection in the classroom. *Journal of Information Technology Education: Research, 14*(1), 161-178. Retrieved from http://www.jite.org/

Sailors, M., & Price, L. (2015). Support for the improvement of practices through Intensive Coaching (SIPIC): A model of coaching for improving reading instruction and reading achievement. *Teaching and Teacher Education*, *45*, 115–127. http://dx.doi.org/10.1016/j.tate.2014.09.008

Saldaña, J. (2015). *The coding manual for qualitative researchers*. Thousand Oaks, CA: Sage.

Sample size. (2013). In Emmel, N. *Sampling and choosing cases in qualitative research: A realist approach* (pp. 137-156). London: SAGE Publications Ltd. http://dx.doi.org/10.4135/9781473913882

Sardegna, V. G., & Yu, L. T. (2015). Taiwanese elementary school teachers' computer literacy and use: Implications for language teaching training programs. *CALL-EJ, 16*(1), 1-15. Retrieved from http://callej.org/

Schechter, R. L., Kazakoff, E. R., Bundschuh, K., Prescott, J. E., & Macaruso, P. (2017). Exploring the impact of engaged teachers on implementation fidelity and reading skill gains in a blended learning reading program. *Reading Psychology, 38*(6), 553–579. http://dx.doi.org/10.1080/02702711.2017.1306602

Schechter, R., Macaruso, P., Kazakoff, E. R., & Brooke, E. (2015). Exploration of a Blended Learning Approach to Reading Instruction for Low SES Students in

Early Elementary Grades. *Computers in the Schools, 32*(3-4), 183–200. https://doi.org/10.1080/07380569.2015.1100652

Scheeler, M. C., Congdon, M., & Stansbery, S. (2010). Providing immediate feedback to co-teachers through bug-in-ear technology: An effective method of peer coaching in inclusion classrooms. *Teacher Education & Special Education, 33*(1), 83–96. http://dx.doi.org/10.1177/0888406409357013

Scheeler, M. C., Morano, S., & Lee, D. L. (2018). Effects of immediate feedback using bug-in-ear with paraeducators working with students with autism. *Teacher Education and Special Education, 41*(1), 24-38. http://dx.doi.org/10.1177/0888406416666645

Schutte, L., Van den Borne, M., Kok, G., Meijer, S., & Mevissen, F. E. (2016). Innovatively supporting Teachers' implementation of school-based sex education: Developing a web-based coaching intervention from problem to solution. *Journal of Medical Internet Research, 18*(7). Retrieved from https://www.jmir.org/

Shannon, D., Snyder, P., & McLaughlin, T. (2015a). Preschool teachers' insights about web-based self-coaching versus onsite expert coaching. *Professional Development in Education, 41*, 290–309. Retrieved from https://www.tandfonline.com/loi/rjie20

Shannon, L. C., Styers, M. K., Wilkerson, S. B., & Peery, E. (2015b). Computer-assisted learning in elementary reading: A randomized control trial. *Computers in the Schools, 32*(1), 20–34. https://doi.org/10.1080/07380569.2014.969159

Sharplin, E. J., Stahl, G., & Kehrwald, B. (2016). “It's about improving my practice:” The learner experience of real-time coaching. *Australian Journal of Teacher Education, 41*(5). http://dx.doi.org/10.14221/ajte.2016v41n5.8

Shelton, B. E., & Parlin, M. A. (2016). Teaching math to deaf/hard-of-hearing (DHH) children using mobile games: Outcomes with student and teacher perspectives. *International Journal of Mobile and Blended Learning, 8*(1), 1–17. http://dx.doi.org/10.4018/IJMBL.2016010101

Shewell, J. (2014). Collecting video-based evidence in teacher evaluation via the *DataCapture* mobile application. *Journal of Applied Learning Technology*, *4*(2), 6-14. Retrieved from http://journals.sfu.ca/jalt/index.php/jalt

Sim, J., Saunders, B., Waterfield, J., & Kingstone, T. (2018). Can sample size in qualitative research be determined a priori? *International Journal of Social Research Methodology, 21*(5), 619-634. http://dx.doi.org/10.1080/13645579.2018.1454643

Slevin, E., & Sines, D. (2000). Enhancing the truthfulness, consistency and transferability of a qualitative study: Utilising a manifold of approaches. *Nurse Researcher, 7*(2), 79-97. http://dx.doi.org/10.7748/nr2000.01.7.2.79.c6113

Spiteri, M., & Rundgren, S. N. (2017). Maltese primary teachers’ digital competence: implications for continuing professional development. *European Journal of Teacher Education, 40*(4), 521-534. http://dx.doi.org/10.1080/02619768.2017.1342242

Staker, H., & Horn, M. B. (2012). Classifying K-12 blended learning. *Innosight Institute*. Retrieved from https://www.christenseninstitute.org/?gclid=EAIaIQobChMIq-7lnsjG4AIVmCCtBh3GlwLZEAAYAiAAEgInPPD_BwE

Stirling, A. E. (2013). Applying Kolb's theory of experiential learning to coach education. *Journal of Coaching Education*, *6*(2), 103–121. https://doi.org/10.1123/jce.6.2.103

Storie, S., Coogle, C. G., Rahn, N., & Ottley, J. R. (2017). Distance coaching for pre-service teachers: Impacts on children's functional communication in inclusive preschool classrooms. *Early Childhood Education Journal, 45*(6), 735–743. http://dx.doi.org/10.1007/s10643-016-0824-8

Suhrheinrich, J., & Chan, J. (2017). Exploring the effect of immediate video feedback on coaching. *Journal of Special Education Technology, 32*(1), 47-53. http://dx.doi.org/10.1177/0162643416681163

Thibaut, P., Curwood, J. S., Carvalho, L., & Simpson, A. (2015). Moving across physical and online spaces: A case study in a blended primary classroom. *Learning, Media and Technology, 40*(4), 458–479. http://dx.doi.org/10.1080/17439884.2014.959971

Thurmond, V. A. (2001). The point of triangulation. *Journal of Nursing Scholarship, 2001*, *33*(3), 253-258. http://dx.doi.org/10.1111/j.1547-5069.2001.00253.x

Tondeur, J., De Bruyne, E., Van den Driessche, M., McKenney, S., & Zandvliet, D. (2015). The physical placement of classroom technology and its influences on

educational practices. *Cambridge Journal of Education, 45*(4), 537-556. http://dx.doi.org/10.1080/0305764X.2014.998624

Truitt, A. A., & Ku, H. Y. (2018). A case study of third grade students' perceptions of the station rotation blended learning model in the United States. *Educational Media International, 55*(2), 153–169. https://doi.org/10.1080/09523987.2018.1484042

Turesky, E. F., & Gallagher, D. (2011). Know thyself: Coaching for leadership using Kolb's experiential learning theory. *The Coaching Psychologist*, *7*(1), 5-14. Retrieved from https://www.bps.org.uk/publications/coaching-psychologist

Varier, D., Dumke, E., Abrams, L., Conklin, S., Barnes, J., & Hoover, N. (2017). Potential of one-to-one technologies in the classroom: Teachers and students weigh in. *Educational Technology Research & Development, 65*(4), 967–992. https://doi.org/10.1007/s11423-017-9509-2

Vernon-Feagans, L., Bratsch-Hines, M., Varghese, C., Bean, A., & Hedrick, A. (2015). The Targeted Reading Intervention: Face-to-face vs. webcam literacy coaching of classroom teachers. *Learning Disabilities Research & Practice (Wiley-Blackwell)*, *30*(3), 135–147. Retrieved from https://onlinelibrary.wiley.com/journal/15405826

Vernon-Feagans, L., Kainz, K., Ginsberg, M., Hedrick, A., & Amendum, S. (2013). Live webcam coaching to help early elementary classroom teachers provide effective literacy instruction for struggling readers: The Targeted Reading Intervention. *Journal of Educational Psychology*, *105*(4), 1175. Retrieved from http://dx.doi.org/10.1037/a0032143

Vrasidas, C. (2015). The rhetoric of reform and teachers' use of ICT. *British Journal of Educational Technology, 46*(2), 370-380. http://dx.doi.org/10.1111/bjet.12149

Wake, D., Dailey, D., Cotabish, A., & Benson, T. (2017). The effects of virtual coaching on teacher candidates' perception and concerns regarding on-demand corrective feedback. *Journal of Technology and Teacher Education*, *25*(3), 327. Retrieved from https://www.learntechlib.org/j/JTATE/

Wilczynski, S. M., Labrie, A., Baloski, A., Kaake, A., Marchi, N., & Zoder, M. K. (2017). Web-based teacher training and coaching/feedback: A case study. *Psychology in the Schools*, *54*(4), 433–445. http://dx.doi.org/10.1002/pits.22005

Wilkes, S., Macaruso, P., Kazakoff, E., & Albert, J. (2016). Exploration of a blended learning approach to reading instruction in second grade. *In EdMedia: World Conference on Educational Media and Technology* (pp. 797-802). Association for the Advancement of Computing in Education (AACE). Retrieved from https://www.aace.org/

Yaghmour, K. S. (2016). Effectiveness of blended teaching strategy on the achievement of third grade students in mathematics. *Journal of Education and Practice, 7*(5), 65–73. Retrieved from https://iiste.org/Journals/index.php/JEP

Ye, X. D., Chang, Y. H., & Lai, C. L. (2018). An interactive problem-posing guiding approach to bridging and facilitating pre- and in-class learning for flipped classrooms. *Interactive Learning Environments, 27*(8), 1075-1092. https://doi.org/10.1080/10494820.2018.1495651

Yin, R. K. (2014). *Case study research: Design and methods* (5th ed.). Los Angeles, CA: Sage.

Zan, B., & Donegan-Ritter, M. (2014). Reflecting, coaching and mentoring to enhance teacher-child interactions in Head Start classrooms. *Early Childhood Education Journal, 42*(2), 93–104. https://doi.org/10.1007/s10643-013-0592-7

Appendix A: Code Book for Kolb's Experiential Learning Theory

a priori codes	Content Descriptions (with citations)	Inclusion Criteria
Concrete Experiences	"They must be able to involve themselves fully, openly, and without bias in new experiences" (Kolb, 1984, p. 30); "Focuses on being involved in experiences and dealing with immediate human situations in a personal way. It emphasizes feeling as opposed to thinking" (Kolb, 1984, p. 68).	Teacher shares openness to virtual coaching. Teacher describes openness to implementing blended learning in the classroom. Teacher describes feelings of excitement or anticipation in participating in virtual coaching or in designing a blended learning classroom. Teacher describes openness to trying a new strategy without hesitation.
Reflective Observation	"They must be able to reflect on and observe their experiences from many perspectives" (Kolb, 1984, p. 30); "Focuses on understanding the meaning of ideas and situations by carefully observing and impartially describing them. It emphasizes understanding as opposed to practical application" (Kolb, 1984, p. 68).	Teacher describes how virtual coaching benefitted their instruction and their students' learning. Teacher reflects on teaching and learning practices designed for the classroom and how they impacted their practice and students. Teacher reflects on their technology level and how it impacted their practice and students. Teacher reflects on instructional shifts and the impacts on students. Teacher describes strategies they tried in the classroom and reflects on what they observed with students.
Abstract Conceptualization	"They must be able to create concepts that integrate their observations into logically sound theories" (Kolb, 1984, p. 30); "Focuses on using logic, ideas, and concepts. It emphasizes thinking as opposed to feeling" (Kolb, 1984, p. 69).	Teachers describe using their virtual coaching sessions and strategy implementations to make blended learning shifts in their classroom. Teachers describe how the implementation of blended learning supported personalization in the classroom.

		Teachers describe how using technology strategically in the classroom supported blended learning culture (ownership, choice, student voice, etc.).
Active Experimentation	"They must be able to use these theories to make decisions and solve problems" (Kolb, 1984, p. 30); "Focuses on actively influencing people and changing situations. It emphasizes practical applications as opposed to reflective understanding" (Kolb, 1984, p. 69).	Teachers describe how using a strategy previously allowed them to solve a later challenge in the classroom. Teacher describes how their virtual coach's support modeled for them how to use the coaching methodology (Try-Measure-Learn) to solve challenges in their classroom.

Appendix B: Code Book for Magana's T3 Framework

a priori codes	Content Descriptions (with citations)	Inclusion Criteria
Translational (T1)	Where technology integration provides the lowest level of value, as educators use technology to do analog tasks digitally to automate the process (automation, T1.1) or consume information in a variety of ways (consumption, T1.2) (Magana, 2017, pp. 28-35).	Teacher describes using technology to automate a task or process. For example, the teacher has students type the answers to questions instead of writing them. Teacher describes technology as a means for students to consume information in a variety of ways. This is usually teacher-driven.
Transformational (T2)	Where the integration of technology leads to a substantial change in the nature or impact of the task, or the role of the individual doing the task (Magana, 2017, p. 38). In the production (T2.1) phase of this stage, learners produce quality, authentic evidence to illustrate their growth in knowledge and their thinking processes (Magana, 2017, p. 42). In the contribution (T2.2) stage, learners apply all the qualities of the production phase while extending their knowledge to others (Magana, 2017, pp. 53-54);	Teacher describes how he/she used a strategy in combination with a technology tool to support personalization in the classroom. Teacher describes students producing authentic evidence of learning and growth. Teacher describes student-generated tasks leading to the globalization of their learning (sharing with others).
Transcendent (T3)	Where technology use goes beyond what is normally expected in education and focuses on students designing learning opportunities based on their passions and interests (inquiry design, T3.1), and social entrepreneurship (T3.2) where students solve problems and bring those solutions to life via technology in the real-world (Magana, 2017, pp. 63-77).	Teachers are focused on student-designed learning experiences or social entrepreneurship. Students are solving problems and sharing their solutions with the world. Teachers describe innovative practices that put learning creation in the hands of students. Teachers describe how learning experiences are shaped by students' passions and interests and how these passions and interests are used in authentic ways.

Appendix C: Code Book for Emergent Codes in Level 2 Analysis

	Emergent Themes	Inclusion Criteria
Concrete Experiences	Outside perspectives and shared experiences	Coach has an outside perspective (i.e., doesn't know teacher ahead of coaching or context, non-biased opinion).
		Coach has shared experiences (i.e., similar grade level or content area; second year with coach) that were supportive during coaching. Coach
	Professional growth	Coach uses knowledge of the teacher's goals, strengths, and weaknesses to *meet the teacher where they are.*
		Teacher mentions openness to professional improvement or becoming a better teacher.
		Teacher mentions strategies for professional growth (i.e., video-based coaching)
	Support for instructional shifts	Teacher is open to trying new strategies or technologies to shift their instruction.
		Coaching as a support for new teachers or for teachers transitioning to a new position.
	Technology integration support and implementation	Coach facilitates technology integration and support with technology tools.
		Teacher mentions purposeful/meaningful implementation of technology, often as a tool for personalization.
	Feedback and reflection	Transfer of reflective practices from the teacher to the students.
		Teacher engages in feedback and reflection cycle with coach.
Reflective Observation	Professional impacts on teachers	Teacher mentions coach support for planning for a strategy or technology implementation.
		Teacher mentions the coach provided feedback during planning.
		Coach supports the teacher in reflecting on their practice.

	Impacts on students	The coaching process supported teachers to implement strategies that impacted students' learning.
	Technology as a lever for instructional shifts	Teacher mentions implementing a technology-based strategy that shifted instruction for students or themselves.
Abstract Conceptualization	Personalization	Teacher mentions their use of non-tech or tech strategies in the classroom to allow students to make choices, drive learning, and work at their own pace.
	Integrating technology	Teacher mentions how their coach supported them with the integration of technology into the classroom.
	Differentiation	Teacher mentions receiving support for using tech or non-tech strategies to differentiate for students.
	Professional support	Teacher mentions the coach supporting with the implementation of technology for management or confidence building.
Active Experimentation	Shift in instruction	Teacher mentions the coach supporting the teacher, through change mindset, to shift instruction, often through technology usage.
	Reflective practice	Teacher mentions using reflection to drive future change in non-tech and tech ways.
T1: Translational	Digital Automation	Teacher mentions using technology to automate instructional or learning tasks.
	Consuming Information	Teacher mentions using technology for accessing some digital form of content-related information or knowledge via a variety of media.
	Support for Using Digital Resources	At the T1: Translational level of implementation, the teacher mentions receiving support for using digital resources from their coach.
	Technology Confidence	Teacher mentions statements of confidence with using technology.
T2: Transformational	Student Produced Authentic Evidence	Teacher mentions giving students the opportunity to produce evidence for an authentic audience.
	Authentic Evidence	Teacher mentions producing or planning for authentic evidence.

	Authentic Learning	Teacher mentions giving students the opportunity to engage in learning in an authentic way (i.e., virtual pen pals, virtual field trip).
T3: Transcendent	Learning Experiences Shaped by Students	Teacher mentions students engaging in inquiry-based learning opportunities where they had ownership over the design.

Appendix D: Permission to Include Process of Experiential Learning Figure

Permissions
4th Floor, Auto Atlantic
Corner, Hertzog Boulevard &
Heerengracht
Cape Town, 8001
South Africa
USAPermissions@pearson.com

Sep 17, 2018 PE Ref # 206520

JESSICA ANDERSON
c/o Walden University

Dear Jessica

You have our permission to include content from our text, ***EXPERIENTIAL LEARNING: EXPERIENCE AS A SOURCE OF LEARNING & DEVELOPMENT, 1st Ed. by KOLB, DAVID A.,*** in your dissertation or masters thesis at Walden University.

Content to be included is:
Figure 3.1 Structural Dimensions Underlying the Process of Experiential Learning and the Resulting Basic Knowledge Forms on page 42

Please credit our material as follows:
KOLB, DAVID A., EXPERIENTIAL LEARNING: EXPERIENCE AS A SOURCE OF LEARNING & DEVELOPMENT, 1st, ©1984. **Reprinted by permission of Pearson Education, Inc., New York, New York.**

Sincerely,
Allison Bulpitt, Permissions Analyst

Appendix E: Permission to Include Stages of Educational Technology Use Figure

Corwin Press LICENSE
TERMS AND CONDITIONS

Mar 11, 2020

This is a License Agreement between Jessica Anderson ("You") and Corwin Press ("Corwin Press") provided by Copyright Clearance Center ("CCC"). The license consists of your order details, the terms and conditions provided by Corwin Press, and the payment terms and conditions.

All payments must be made in full to CCC. For payment instructions, please see information listed at the bottom of this form.

License Number	4445661237492
License date	Sep 08, 2018
Licensed content publisher	Corwin Press
Licensed content title	Disruptive Classroom Technologies
Licensed content date	Jan 1, 2017
Type of Use	Thesis/Dissertation
Requestor type	Academic institution
Format	Electronic
Portion	chart/graph/table/figure
Number of charts/graphs/tables/figures	1
The requesting person/organization is:	Jessica Anderson
Title or numeric reference of the portion(s)	Figure 2.3: T3 Framework "Stages of Educational Technology Use"
Title of the article or chapter the portion is from	Chapter 2 The T3 Framework: A New Framework for Innovation in Education
Editor of portion(s)	NA
Author of portion(s)	Dr. Sonny Magana
Volume of serial or monograph.	NA
Page range of the portion	21
Publication date of portion	2017
Rights for	Main product
Duration of use	Life of current edition