EXAMINING THE IMPACT OF VIRTUAL MENTORING AND COACHING ON TEACHERS OF ENGLISH LEARNERS' PROFESSIONAL GROWTH

A Dissertation

by

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ABSTRACT

The purpose of this dissertation was to investigate the impact of virtual mentoring and coaching (VMC) and teachers' experiences and perceptions of VMC on their professional growth related to ELs. A systematic review was conducted to understand the research on VMC for in-service teachers working with ELs. Overall, findings indicated that VMC supported in-service teachers' professional growth; however, only one study addressed in-service teachers working with ELs.

To examine the impact of VMC on teachers of ELs, I utilized classroom observation data recorded by a validated classroom observation instrument from a federal-funded randomized controlled trial (RCT) study, Project Empowering Teachers of English Language Learners (ETELL). Participants consisted of 211 who received VMC across school districts in Texas. The teachers submitted pre- and post-observation videos that were utilized to examine teachers' implementation of pedagogical practices and language content related to ELs. Results indicated that teachers in treatment and control conditions used ESL strategies to support students' light and dense language development. However, the findings did not result in higher use of ESL strategies implemented by the treatment teachers. Additionally, results indicated that teachers in the control condition promoted students' use of the English language across various domains (verbal, reading, and writing).

To further investigate the impact of VMC as experienced and perceived by teachers of ELs, I conducted semi-structured interviews. All teachers from the previous study were contacted to volunteer in this study results in a small sub-sample of thirteen teachers consenting to be part of the study. However, due to reaching saturation of data, only eight teachers were interviewed. Thematic analysis indicated that teachers' experiences and perceptions of the VMC

were positive. Teachers shared their ability to critically reflect in an environment where a positive mentor-mentee relationship was built.

DEDICATION

I dedicate this dissertation to my loved ones. First, I dedicate this to my father, whose unconditional support and motivation have made me the person I am today. Second, I dedicate this to my mother, who listens and understands. Special dedication goes to my husband, whose unconditional love, support, and patience have contributed to the adult I've become. Last but not least, I dedicate this to all my family members, especially my welita Matiana and tia Esther, whose love and care during my school breaks in Mexico have contributed to the woman I am today.

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NOMENCLATURE

BICS	Basic Interpersonal Communicative Skills
CALP	Cognitive Academic Language Proficiency
EL	English Learner
ESSA	Every Student Succeeds Act
ESL	English as a Second Language
PD	Professional Development
TBOP	Transitional Bilingual Observation Protocol
VPD	Virtual Professional Development
VMC	Virtual Mentoring/Coaching

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CHAPTER I INTRODUCTION

This chapter consists of a background overview of the study, statement of the problem, the purpose of the study and research questions, and significance of the study that framed this dissertation. Subsequently, a summary of each chapter is presented.

Background of the Study

The continuous increase of English learners (ELs) (National Center for Educational Statistics [NCES], 2020) coupled with persistent academic gaps in K-12 United States public schools (NCES, 2020) has led to the reformation of policies revolving around equity and quality of instruction for ELs (U.S. Department of Education [USDE], 2015). These changes have impacted teachers' professional growth and students' learning. According to the NCES (2020), ELs represent over 4.9 million of the increasing student population. As the population of ELs increases and ceaseless English as a Second Language (ESL) and bilingual teacher shortages across the nation persist (Hayden, 2020; USDE, 2020), schools and districts have to resort to ill-prepared mainstream teachers to support the academic, linguistic, and cultural needs of these diverse students (Sugimoto, 2020; Villegas, 2018). This, among other factors such as ELs acquiring content and language simultaneously (Roy-Campbell, 2012; Villegas, 2018), contributes to the constant low academic performance across national standardized assessments (National Assessment of Educational Progress [NAEP], 2019). However, given the increase of ELs and recurring academic gaps, researchers (Irby et al., 2018; Lara-Alecio et al., 2012; Tong et al., 2017; Vaughn et al., 2017; Vu et al., 2014; Ware & Benschoter, 2011; Zhang, 2017) and

policymakers (USDE, 2015) are actively seeking ways to improve education for ELs and teachers of ELs.

To support ELs and teachers, researchers have developed professional development (PD) opportunities (e.g., face-to-face, one-day workshops, mentoring/coaching) to enhance teacher's knowledge of ELs (Abbott & Rossiter, 2011; Franco-Fuenmayor et al., 2015; Gore et al., 2017; Tong et al., 2017). However, the varying types of PDs are not always feasible or available for teachers, so researchers have integrated virtual platforms to deliver PD that is suitable for teacher's needs. The increasing attention of providing PD through virtual platforms is evident across various fields within education, from virtual courses to virtual mentoring and coaching (VMC: Irby, 2015) (Ainsa & Olivarez, 2017; Bates et al., 2016; Collins & Liang, 2015; Dede et al., 2009; Dorner, 2012; Healy et al., 2020; Matsumura et al., 2019a). To stay consistent throughout the dissertation, I will use the term virtual term virtual mentoring and coaching (VMC: Irby, 2015) to refer to other terms used in the literature such as e-mentoring, e-coaching, or bug-in-ear. Even though PD through virtual platforms has increased in popularity, research on PD's effectiveness through virtual platforms on special programs such as ESL or bilingual education is scant. Researchers would agree that disseminating research-based pedagogical practices for EL teachers has received insufficient attention despite the increasing EL population (Guler, 2020; Hannah & Lam, 2016; Irby et al., 2020; Tong et al., 2019). Alternatives such as virtual professional development (VPD: Tong et al., 2015) or VMC should be considered to reach the mass population of teachers that otherwise would not have access to the traditional face-to-face PD due to time (Healy, 2020; Smith, 2014; Vu, 2014), funding (Healy, 2020; Carmouche, 2018), or geographical constraints (Healy et al., 2020; Ruble, 2013; Smith, 2014; Vernon-Feagans, 2015; Vu, 2014). Similarly, to VMC, I will use the term virtual professional

development, first introduced by Tong et al. (2015), to refer to other terms presented in the literature, online professional development, e-learning, or web-based learning. According to various researchers, a lack of preparation leads teachers to resort to others or not view themselves as fully responsible for this population (Sugimoto, 2020; Yoon, 2008; Villegas, 2018). Consequently, affecting students' academic growth and performance due to various factors such as poor-quality instruction that is not equitable, which, in turn, negatively impacts ELs. By integrating online platforms to deliver VPD or VMC, teachers with zero to limited knowledge of ELs would have the opportunity to enrich their understanding regarding different aspects concerning ELs. As researchers have indicated, PD virtually (e.g., VPD or VMC) is a viable and effective option to face-to-face PD when constraints such as time, funding, or location are constraining teachers' professional growth (Binmohsen & Abrahams, 2020; Fishman et al., 2013; Russell et al., 2009).

However, careful consideration should be placed on the impact VPD or VMC has on teacher's classroom instruction. The research implies that even though teachers receive countless PD hours, they do not apply that knowledge in everyday instruction (Gore et al., 2017; Malanson et al., 2014; Pianta et al., 2008; Powell et al., 2010). The transferability of knowledge from PD sessions or courses could be due to various reasons, such as the PD's limitation in allowing the individuals to demonstrate knowledge in everyday instruction (Carmouche et al., 2018; Matsumura et al., 2019b). More recently, researchers such as Carmouche et al. (2018) and Matsumura (2019) stressed the need for individualized support such as mentoring and coaching to support teachers' application of knowledge learned in PD. This means that by combining training and mentoring/coaching, teachers can receive contextualized support that can aid in mastering PD content, which can support the quality of instruction.

Because VMC embedded in VPD has reported increases in teachers' professional growth (Matsumura et al., 2019b; Tang et al., 2020). It is worth examining how VMC might support ELs' professional growth. In this dissertation, quantitative and qualitative methods will be used to understand the impact VMC has on teachers' knowledge and how academic language content mediates teachers' pedagogical practices related to ELs. This data will be contextualized with a literature review of VMC's role in teachers' professional growth.

Significance of the Study

As stated in multiple studies, effective PD has shown to be a strong predictor of improved quality instruction (Gore et al., 2017; Tong et al., 2014). However, studies in VMC on teachers of ELs' professional growth are under-researched. Only one study was found, where researchers reported the combined effect of PD and VMC on teachers' professional growth (Nugent et al., 2016). Findings from Nugent et al. (2016) showed higher effects resulted from the PD than the VMC. Despite the results, the researchers emphasized supporting teachers continuing education with individualized support (e.g., mentoring/coaching). Therefore, as presented in this study, there must be clear delineations of what produces higher positive outcomes for teachers' professional growth, whether solely PD or additional support through mentoring and coaching. In doing so, researchers, practitioners, and policymakers can focus on developing opportunities teachers will highly benefit from.

This dissertation's studies will contribute to the growing literature on the effect and/or impact virtual platforms for PD can have on teachers' professional growth. Virtual platforms can provide researchers, practitioners, and policymakers opportunities for expansion, outreach, and feasibility. Furthermore, the high numbers of teachers working with ELs could receive the PD

necessary, which would support ELs in receiving quality instruction that would positively affect their academic achievement.

This dilemma is especially significant when considering a transformation in teachers' pedagogical knowledge when receiving VMC. In support of this, the dissertation explores teacher outcomes regarding academic language content and pedagogical practices implemented due to VMC. As researchers or practitioners develop PD opportunities for teachers, there should be an emphasis on supporting teachers' implementation of knowledge learned in VMC to classroom application. In providing additional individualized support (e.g., VMC), teachers of ELs can learn effective pedagogical methods, approaches, and techniques that allow them to deliver effective educational practices that support their students' academic, linguistic, and cultural needs.

Purpose of Study and Research Questions

The purpose of this dissertation was to examine the impact VMC had on teacher's pedagogical practices and academic language use as it pertains to ELs. A total of nine research questions were addressed in this dissertation, which served as three individual but interdependent studies: (a) a systematic review on the impact VMC has on teachers' professional growth, (b) a mediation analysis of teachers use of ESL pedagogical practices on language content, (c) an investigation on teachers' experiences and perceptions of VMC. The following research questions guided these studies:

1. How do virtual mentoring and coaching interventions affect teachers' professional growth, including teachers of ELs?
2. What notable trends exist in virtual mentoring and coaching that most affected teachers' professional growth, including teachers of ELs?

3. How do studies contrast in their research design?
4. What is the difference between treatment and control teacher's implementation of individual ESL strategies when using light language content (e.g., visuals, questioning, academic language scaffolding) as measured by TBOP?
5. What is the difference between treatment and control teacher's implementation of individual ESL strategies when using dense language content (e.g., visuals, questioning, academic language scaffolding) as measured by TBOP?
6. What is the difference between treatment and control teachers' use of light language content according to activity structures and mode as measured by TBOP?
7. What is the difference between treatment and control teachers' use of dense language content according to activity structures and mode as measured by TBOP?
8. What are teachers' perceptions and experiences of VMC's impact on their professional growth related to ELs?
9. How did teachers perceive and experience the VMC design in supporting their professional growth related to ELs?

Chapter Overview of Structure of the Dissertation

In this dissertation, a three journal-article format was adopted. In Chapter, I, an overview of the background of the study, statement of the problem, purpose of study and research questions, the significance of the study, and an overview of chapters are presented. The following three chapters, Chapter II, III, IV, are independent but interdependent studies written in a journal article format. Chapter V's final chapter provides an extensive synthesis of chapters II, III, and IV.

Chapter I focuses on providing an introduction and overview of the dissertation structure. This chapter sets the framework for preparing the different components embedded within each of the interdependent studies.

The second chapter is a systematic literature review of VMC in U.S. public schools, seeking to answer research questions one to three. Due to the gap in VMC for teachers of ELs, this systematic review focused on understanding the development of VMC over the last twenty years, inclusive of VMC for teachers of ELs and non-ELs. The review serves as a guide on (a) development and progression of VMC studies conducted in the U.S., (b) framing future research questions, and (c) integrating robust methodological approaches of studies related to VPD and VMC for teachers of ELs and non-ELs.

The third chapter examines VMC's impact on teachers of ELs pedagogical practices, activity structure, communication mode, and academic language by answering research questions four through seven. More specifically, the goal is to examine teachers' and students' use of academic language during instruction and how the teachers implement ESL strategies to support academic language development between teachers in the treatment and control condition. Additionally, further analysis on how teachers use academic language in activity structures and communications modes is examined. The data for this study was gathered from a validated classroom observational instrument developed by Lara-Alecio and Parker (1994), TBOP, which measured frequency-occurrences of various dimensions within quality instruction (e.g., ESL strategy, activity structure, language content). The data collected was nominal for the four variables under examination, ESL strategy, activity structure, communication mode, and language content. The differences between the two conditions provided an analysis of VMC's

impact on teachers' quality of instruction. Most importantly, the studies guide future content and structural development of VMC for teachers of ELs.

Chapter four focuses on addressing questions eight and nine to understand teachers' experience and perceptions of VMC related to ELs and their professional growth. A few studies focus on gaining an in-depth understanding of VMC through qualitative methodological approaches (Bang, 2013; Ruble et al., 2013). However, the qualitative literature regarding teachers' experience with VMC of ELs is scant, limited to qualitative studies analyzing surveys or recorded mentoring observations (Tang et al., 2020). In an extensive literature review, no qualitative studies related to VMC for in-service teachers of ELs gathering detailed information from individual teachers regarding the phenomenon under investigation were found. Therefore, this study follows a semi-structured interview with teachers who previously received VMC related to ELs. By understanding teachers of ELs' experience with VMC, researchers, policymakers, and practitioners can get a clearer understanding of the needs and dilemmas they encounter during VMC, which in turn supports the development of well-balanced and structured VMC opportunities.

The final chapter comprises a synthesis of all chapters, focusing on the three interdependent studies' significance and critical findings.

Chapter II

This chapter includes a systematic review titled "Virtual Mentoring and Coaching in Education: A Systematic Literature Review." This independent study focused on systematically reviewing the literature regarding VMC in the U.S. Due to the researcher's understanding of the limited literature regarding VMC for ELs teachers; it was decided that the review should encompass VMC as a whole, whether for teachers of ELs or non-ELs. Therefore, the purpose of

the review was to systematically review articles within the last 20 years (2000-2020) containing intervention studies that integrated VMC while comparing articles with teachers of ELs (i.e.., bilingual, ESL) and non-ELs. In doing so, questions one to three were developed. These questions focused on the: (a) effect of VMC on teacher's professional growth, including teachers of ELs, (b) notable trends that most affect teacher's professional growth, including teachers of ELs, and (c) studies research design. After the questions were established, inclusion and exclusion criteria were developed. These criteria were developed to support the collection of articles and ensure the articles selected addressed the research questions. Most importantly, it was vital to ensure the articles, not including a description of the VMC intervention and discussion of teacher outcomes, were also excluded because they would not help address the different elements of the research questions. After developing the criteria, a list of search terms was created to help in the search process. The idea was to develop a list of keywords that were widely used in the literature. For example, it was vital to include all words interchanged with the term I adopted in this dissertation, VMC, first introduced by Irby (2015). In doing so, I would ensure and acknowledge the synonymous terms to VMC used by other researchers in the literature, such as online professional development, e-learning, or bug-in-ear. Once the research questions, criteria, and keywords were established, it was time to initiate the search process.

The systematic review search process entails various phases, so the researcher sought help from a librarian knowledgeable in literature and systematic reviews. The first step was to address the difference between keywords across the research databases. Due to the differences in keywords across the research databases, search terms per database had to be located so that each database could optimize the search of all or most potentially relevant articles within its database. With support from the librarian, the researcher found search terms within each database

synonymous with the ones the researcher developed. After developing the list of synonymous terms for each database, the search began. Five major databases in the education field were used, Education Resources Information Center (ERIC), Education Source, APA PsycInfo, Professional Development Collection, and Academic Search Ultimate. The search began using the list of search terms by each database to search in titles and abstracts. After searching all databases, a total of 1,204 articles were located after removing 97 duplicates. All 1,204 titles and abstracts were screened, yielding 26 articles ready for full-text level screening, which resulted in 7 articles. During the entire searching and screening process, which took weeks, the researcher met with a professor to discuss the progress and shared the recent publication of an article implementing VMC. After screening the title and abstract of the article suggested by the professor, the article was ready for a full-text level screening. This resulted in 8 articles meeting the full-text level inclusion and exclusion criteria. After completing an entire phase from searching to full-text level screening, the researcher met with the librarian, who suggested reviewing the bibliographies of the eight articles that met the full-text level inclusion and exclusion criteria. In reviewing bibliographies and undergoing title and abstract screening to full-text level screening, the review resulted in a total of 4 articles that met the full-text level inclusion and exclusion criteria. A final search through Google Scholar was conducted to ensure all articles were located, resulting in seven articles that met the full-text level inclusion and exclusion criteria. In the end, a total of 15 articles met the full-text level inclusion and exclusion criteria; therefore, rendering them appropriate for the systematic review analysis.

After a final list of articles was finalized, the analysis process could begin. The researcher developed a google form to code the data according to the research questions. As suggested by Belur et al. (2018), to increase the reliability of the systematic review, two aspects critical to

reliability were considered: "stability (which refers to whether coder behavior remains the same over time), accuracy (whether coding is according to the pre-agreed codebook), and reproducibility (where multiple coders code with the same results)" (p. 5). With support from another colleague, the researcher and colleague met to discuss the information or characteristics that would be collected from each study: year, grade-level, context, sample, content, mentors, intervention time, medium, analysis, VMC description, and findings. After reviewing and discussing the form, the interrater reliability phase began with four articles randomly selected to be double coded. Once all four articles were double-coded, interrater coding reliability was calculated using the percent agreement equation yielding 75% rater agreement. The pre-agreed codebook was reviewed to ensure accuracy and reproducibility, and disagreements were discussed among the coded variables until reaching a 100% rater agreement. The author then coded the remaining of the articles, and the colleague verified all the codes.

Once the data was coded, the author reviewed the research questions and analyzed data to address the research questions. These articles were analyzed based on teacher outcomes, VMC facets, VMC interventions, delivery method (asynchronous v. synchronous), and research design comparisons.

Chapter III

Chapter three is titled "Understanding the Relationship Between Teachers Implementation of Pedagogical Practices and Academic Language for English Learners After Virtual Mentoring and Coaching Intervention." In supporting teachers of ELs, we investigate the impact of VMC on teacher's knowledge regarding ELs. Teachers' knowledge encompasses various dimensions; in this study, we investigate the relationship between four dimensions, ESL strategies, activity structure, communication mode, and academic language, the teachers and

students use during instruction. ESL strategies refer to research-based pedagogical practices commonly examined by researchers, such as visual and language scaffolding (Ardasheva et al., 2015; Banse et al., 2017; Irby et al., 2018), questioning (Irby et al., 2018), and advanced organizers (Abdul et al., 2017; Irby et al., 2018). Activity structures refer to the teacher-to-student behaviors (e.g., observe-collaborate). Communication mode is used in conjunction with activity structure and language content to document student's communication modes (e.g., aural, verbal). Academic language refers to teachers and students' use of academic language, referred to as cognitive academic language proficiency, first introduced by Cummins (1979). In this study, questions four through seven are addressed.

This study's concepts and theories include online learning (VMC), transformative learning theory, and quality instruction. The online learning concept is the medium in which teachers will receive the knowledge to improve their instruction quality. The transformative learning theory explains how teachers will transform their learning to enhance their frame of reference, which will ultimately support their quality of instruction. The construct of quality instruction refers to the content presented in the virtual platforms to transform their learning. For ELs, quality instruction can be composed of various dimensions. Due to this construct's extensive scope, I have narrowed our interest to two primary dimensions, academic language and pedagogical practices focused on enhancing teachers' quality of instruction. The two dimensions encompass a portion that enables ELs access to dense academic language instruction facilitated through effective pedagogical practices.

Before collecting data, I reviewed the literature regarding the improvement of education for ELs. The three concepts widely discussed in the literature include research-based pedagogical practices for ELs, academic language, and dissemination of findings through PDs. I found

researchers concurring that PD content should be followed by mentoring and coaching because it is conducive to contextualized teacher support evident in instruction delivery (Carmouche et al., 2018; Nugent et al., 2016). Once there was a clear understanding of the analyzed variables, I collected and analyzed the data.

I present my results using classroom observational data recorded by a validated classroom observation instrument, TBOP. This data was derived from an ongoing randomized controlled trial (RCT) research project, Empowering Teachers of English Language Learners (ETELL), which documented the teacher's ESL strategies, activity structure, communication mode, and academic language used during instruction the teacher or student. The data derived from the instrument is nominal data, which was used to conduct chi-square independence tests and post hoc analysis.

Chapter IV

Chapter IV is a qualitative study titled "Understanding In-service Teachers' Experiences and Perceptions on Professional Growth After Receiving Virtual Mentoring and Coaching Related to English Learners." The purpose of this qualitative study is to get a deeper understanding of the impact VMC had on in-service teachers' pedagogical practices related to ELs. To get a better sense of this phenomenon, I utilized a qualitative methodology. This methodology provided the researchers with the opportunity to understand the VMC phenomena in teachers of ELs' everyday teaching practices. Questions eight and nine were addressed in this study.

The qualitative literature regarding teachers' experiences with VMC is scant. A deeper understanding of this phenomenon would support researchers in acknowledging teacher experiences when developing VMC to maximize their learning. I present my findings utilizing

survey responses to VMC experience and transcribed responses from semi-structured interviews with teachers who participated in VMC. According to Hesse-Biber (2017), triangulation of data increases a study's robustness; therefore, the data gathered from the two sources provided triangulation of data. Additionally, the survey responses and interviews served as a clarification tool and helped fill in the gaps that were not evident in the previous study that utilized classroom observations.

In analyzing the data, thematic analysis was conducted. According to Braun and Clarke (2006), as cited in Forrester and Sullivan (2019), this method allows the researcher to examine the data for recurring themes closely (e.g., topics, ideas) within the pure qualitative, detailed, and nuanced data.

Chapter V

The final chapter summarizes chapters two to four. I discuss key findings from all studies and present significance and contributions to the literature regarding VMC and quality instruction for ELs. I also provide implications and recommendations for future studies developing VMC.

CHAPTER II VIRTUAL MENTORING AND COACHING IN EDUCATION: A SYSTEMATIC LITERATURE REVIEW

Introduction

In the United States, classrooms have become more ethnically and racially diverse in the last decades (U.S. Census Bureau, 2019). Researchers, policymakers, and teachers are battling ways to address English learners' (ELs) needs as many struggle academically. According to the statistics, ELs represent a susceptible population of learners across all major subject areas in education (National Center for Educational Statistics [NCES], 2019). This can be attributed to many factors, such as ELs obliged to simultaneously learn both content and language (Gupta, 2019; Villegas, 2018). This, coupled with low performance in national standardized assessments, affects policies like the Every Student Succeeds Act (ESSA), which emphasizes a commitment to equal opportunity for specifically disadvantaged and high needs students in the U.S. (U.S. Department of Education, 2020). In education, equity refers to providing all students with "the opportunity to receive a fair, equitable, and high-quality education [that] closes educational achievement gaps" (U.S. Department of Education, 2020, p. 8). Thus, the ESSA mandated that each state's educational plan demonstrate the adoption of English language proficiency standards (ELPS) that (a) recognize four domains such as speaking, listening, reading, and writing; (b) address ELs' various proficiency levels; and most importantly (c) are aligned with state academic standards (U.S. Department of Education, 2020, p. 19). However, while bilingual or English as a Second Language (ESL) teachers have some awareness of proficiency levels across the four domains, the familiarity between proficiency levels and content standards is less likely to be evident because it requires knowledge of various sets of content standards (Lee, 2018).

Therefore, ESSA has mandated the effective advancement of professional development (PD) needed to improve teachers of ELs instruction (U.S. Department of Education, 2020).

Although PD can help teach various pedagogical skills, applying that knowledge in everyday instruction does not always occur (Holmes et al., 2005; Knight, 2009 as cited in Gilbert, 2018). One way to guide teachers of ELs in implementing new techniques in their everyday instruction would be through individualized support. However, challenges of onsite assistance have led researchers to investigate how technology could foster individualized support (Pianta et al., 2008; Carmouche et al., 2018). Individualized support online, commonly referred to in the literature as web-based, online, or e-mentoring/coaching, to remain consistent throughout the article refers to virtual mentoring and coaching (VMC), a term previously first coined in the literature by Irby (2015). VMC allows mentors and coaches, and mentees to interact with minimal constraints due to time, availability, or geography (Bang, 2013; Vernon-Feagans, 2015). Most importantly, VMC can be more efficient in terms of feasibility and accessibility without negatively impacting its effectiveness (Gilbert, 2018). Ultimately, we want to support teachers' professional growth regardless of the method used to deliver quality PD.

English Learners in K-12 Education

According to NCES, the percentage of ELs in public schools in Fall 2016 accounted for 4.9 million of the U.S. student population (NCES, 2019). The increase of ELs in public schools from 2000 to 2016 was over 1.1. million ELs, indicating the drastic growth of ELs in the public education system, yet efforts to support this growing population are minuscule. As seen in 2019, ELs continued to perform low compared to non-ELs at 24 points in the 8th-grade mathematics assessment and 20 points below in the reading assessment (NCES, 2019). The gaps between these two groups can be attributed to various factors such as parental involvement, parents' educational

background, or English proficiency levels. Researchers working with ELs and teachers of ELs in science attributed academic gaps to three interrelated factors: academic language, conceptual understanding, and pedagogical practices (Huerta & Garza, 2019). To support ELs' knowledge of these concepts, teachers' implementation of instructional practices that consider ELs would enable them to provide a more fair, equitable, and quality education. Therefore, teachers of ELs must be given the support needed to enhance their knowledge of ELs as it relates to various concepts, including academic language, conceptual understanding, or pedagogical practices.

Academic Language

As we prepare ELs to succeed academically in public education and higher education, the emphasis on supporting all students, especially ELs, on their academic language development, is vital (Tong et al., 2017). Ardasheva et al. (2015) define academic language as "the primary tool for students to encode, construct, and display their knowledge, thinking, and reasoning (p. 203)." The density of academic language seems vast, which places many ELs at a disadvantage when improving their English language skills and simultaneously comprehending academic content (Li et al., 2017). It is no surprise that many ELs fall behind in public and higher education as they have to spend time and mental resources deciphering meanings of academic vocabulary to comprehend (Cromley et al., 2010). Through PD in mentoring and coaching, teachers of ELs can receive the knowledge and support necessary to improve their instructional practices.

Conceptual Understanding

According to Huerta and Garza (2019), “conceptual understanding can be defined as the acquisition of concepts about a particular topic or idea” (p. 534). The act of conceptually understanding topics and ideas in all subject areas is critical for all learners. However, many

students struggle with conceptual understanding for many reasons: teacher's implementation of pedagogical practices (Boyd & Ikpeze, 2007) or the lack of introductory level information needed to engage in conceptual understanding (Smith et al., 2018). For ELs, the main struggle with conceptual understanding is the lack of English language proficiency. According to Lee & Fradd (1998), as cited in Decristan et al. (2015), "conceptual understanding places high demands on students' language proficiency because inquiry involves analyzing, summarizing, and presenting information in oral or written formats" (p. 359). Ultimately, teachers need PD that supports the subject they are teaching and pedagogical practices that support their delivery of the content to support ELs' conceptual understanding of topics and ideas across various subject areas.

Pedagogical Practices

As mentioned earlier, equitable education refers to a fair and high-quality education, which minimizes academic achievement gaps for disadvantaged and high-needs students (U.S. Department of Education, 2020). Research shows that "higher-quality instruction is positively correlated with ELs outcomes" (Solari et al., 2016, p. 1061). Therefore, a teacher's ability to deliver fair, equitable, and high-quality instruction that addresses ELs' academic, linguistic, and cultural needs should encompass their skill to present content through various pedagogical practices. Pedagogical practices such as collaborative learning, visuals, or academic language scaffolding should facilitate ELs' academic language or conceptual understanding. For example, in a study conducted by Huerta et al. (2016), researchers were interested in measuring students' academic language development and conceptual understanding of science. In this study, classroom teachers received PD in many areas, including explicit academic language instruction to support ELs. Over a year, ELs made significant gains in their academic language, attributed to the PD teachers received. The evidence reviewed here seems to suggest a pertinent role of PD to

support teachers' pedagogical practices. Pedagogical practices implemented by a teacher of ELs should focus on making content comprehensible (Gupta, 2019; He et al., 2018; Krashen, 1985) to facilitate ELs' conceptual understanding. However, implementing appropriate pedagogical practices for ELs requires teachers' understanding of various concepts such as (a) second language learning process, (b) language and culture as a medium of learning, and (c) language and culture as a goal of instruction (de Jong & Harper, 2005, as cited in He et al., 2018) and English language proficiency (Cummins, 2000, as cited in Garza et al., 2018). Therefore, teachers must understand these concepts to address their ELs' diverse needs.

Teachers of English Learners in Public Education

As the number of ELs rises, so should the number of teachers to support the needs of this increasing population. Nationwide, schools suffer from a shortage of teachers year after year (Sutcher et al., 2016; Sutcher et al., 2019). The Texas Education Agency (TEA) annually creates a report of areas in the education field in need of specialized teachers. In the 2018-2019 school year, the U.S. Department of Education recognized a shortage of teachers in various areas such as bilingual and ESL (TEA, 2018). Not only is there a shortage of teachers for the growing population of ELs, but also teachers in the U.S. lack preparation to meet the linguistic, academic, and cultural needs of ELs (Villegas, 2018).

Researchers agree that academic gaps among ELs can be attributed to various factors. According to Huerta & Garza (2019), three interrelated factors that affect ELs' academic gaps include academic language, conceptual understanding, and pedagogical practices. Therefore, to support practitioners of ELs in addressing these gaps, PD that focuses on factors affecting ELs' academic gaps is vital to the academic growth of this population. However, addressing these factors simultaneously may not always be straightforward. Hence, the reason many PD courses,

either face-to-face or online, focus on one or a few areas such as specific subjects, academic language, or pedagogical practices. In sum, as the population of ELs increases, the need to support teachers' professional growth across different areas is crucial in addressing ELs' academic gaps.

Evolution of Professional Development

In education, PD refers to "in-service training designed to advance the content knowledge and pedagogical skills of teachers" (Carmouche et al., p. 128, 2018). There is a mutual understanding among practitioners, researchers, and policymakers of the importance of quality-PD for all teachers. In the same manner, as education has evolved, so has the differentiation in PD. In recent decades, PD has provided differentiated support to teachers from various subject areas (e.g., music, reading, science), various needs (e.g., classroom management, cultural awareness), and special populations (e.g., ELs, children with autism). Research in PD has proven effective for students and teachers of ELs (Lara-Alecio et al., 2009; Tong et al., 2017). However, there is a consensus among practitioners and researchers that PD is not providing teachers with the support needed to apply the understanding of concepts introduced in PD to their everyday instruction (Holmes et al., 2005; Knight, 2009, as cited in Gilbert, 2018).

The consensus findings allowed for the follow-up of professional development, which can come in various forms, such as mentoring and/or coaching. However, constraints such as distance, time, and monetary support, mentoring, and coaching are not always feasible (Knight, 2012 as cited in Gilbert, 2018). Nevertheless, with the evolution of technology, the transition from face-to-face mentoring and coaching to VMC has been widely accepted by many researchers, as we will subsequently read (Simonsen et al., 2009). VMC can be partitioned into two formats: synchronous (communication in real-time) and asynchronous (delayed communication), increasing the application range. However, research in VMC for in-service teachers continues to

be limited, especially for teachers of ELs. Nonetheless, due to its impact on several studies (Bang, 2013; Hunt et al., 2013; Ruble et al., 2013; Simonsen et al., 2009), VMC continues to be an area of interest for reasons such as feasibility and sustainability (Carmouche et al., 2018).

Importance of Virtual Mentoring and Coaching for Teachers of English Learners

The demand for education has evolved due to various factors. With the continuous increase of ELs with diverse needs, the need to support teachers' professional growth has become vital. However, reaching the mass number of teachers in need of PD is challenging when challenges presented by geography or funding arise. It has become evident that creating PD focused on individualized support is necessary to enrich teachers' understanding of the content presented in PD (Aguilar, 2013; Yoon et al., 2007). Individualized support in mentoring and coaching has been implemented for quite some time (Pianta et al., 2008; Ruble et al., 2013; Vernong-Feagans, 2015). With the increase in technology, VMC has been a viable option to support practitioners, researchers, and policymakers' logistical and financial challenges. According to Dede et al. (2009), VMC can be an efficient way to achieve the goals we intend to achieve through traditional PD. The number of empirical studies conducted to evaluate the effectiveness of VMC with teachers of ELs is limited to date. Moreover, in an extensive review of the literature, only two studies discussed ELs. One was qualitative (Leighton et al., 2018), and the other a quantitative, randomized controlled trial (RCT) (Tang et al., 2020). In the Leighton (2018) study, the teacher receiving support was ESL certified, and sixty-five percent of her student population were ELs. In this study, VMC supported teacher's professional growth in areas such as questioning, confidence in instructional delivery, and an increase in explicit talk. In Tang et al.'s (2020) study, the researchers worked with BIL teachers through virtual PD and VMC. The researchers reported improved practices for teachers in the experimental group who received virtual PD and VMC.

Both of these studies (Leighton et al., 2018; Tang et al., 2020) support the idea of developing VMC to support teachers' professional growth related to ELs.

Purpose

The purpose of this systematic review was to review articles within the last 20 years (2000-2020) containing intervention studies that integrate VMC while comparing articles with teachers of ELs (i.e.., bilingual, ESL) and teachers of non-ELs. The following questions guided this study: (1) How do virtual mentoring and coaching interventions affect teachers' professional growth, including teachers of ELs? (2) What notable trends exist in virtual mentoring and coaching that most affected teachers' professional growth? (3) How do studies contrast in their research design? We further discuss our findings on how to best support all teachers, especially teachers of ELs, as they deliver quality instruction to support their ELs. Overall, this study is essential for exploring how VMC has contributed to teachers of non-ELs and ELs' professional growth and, most importantly, support practitioners, researchers, and policymakers in VMC development.

Method

According to Gough et al. (2017), a systematic review is "a review of existing research using explicit, accountable and rigorous research methods" (p. 4). As suggested by Newman and Gough (2020) a systematic review was conducted to ensure the rigor and transparency of the review process and avoid any biases and arbitrariness that could jeopardize the reproducibility and updatability of this study and its findings. This synthesis is needed to make proper decisions regarding future funding, interventions, or programs that will positively affect teacher communities. Therefore, to locate all related literature regarding VMC's topic and their effects on

teachers of ELs and non-ELs professional growth, we set the following inclusion and exclusion parameters for a comprehensive synthesis.

Inclusion

To be included in this systematic review, the study should include:

1. Articles with studies including synchronous (communication in real-time) and asynchronous (delayed communication) through a VMC intervention in any major area (e.g., mathematics, social development), mentioning VMC with brief descriptions of the VMC and addressing teacher outcomes (i.e., instructional practices, reflective practice).
2. Articles published between 2000-2020, giving us 20 years. This period provides a look at the evolution of VMC with 21st-century technology.
3. Articles conducted in the U.S. This provides research, practice, and policy synthesis that can contribute to future studies' alterations or implementations to the specific population of ELs in the U.S.
4. Articles with studies including ELs, non-ELs, and in-service teachers.
5. Articles that conducted empirical studies with VMC interventions for K-12 in-service teachers using various research methodologies (e.g., qualitative, mixed-methods, and quantitative).

Exclusion

1. Articles conducted internationally as these articles may involve the different populations of ELs with varying characteristics of ELs and non-ELs in the U.S. context.
2. Articles with studies, including pre-service teachers.
3. Articles mentioning VMC without descriptions of the VMC intervention were excluded.

4. Articles with VMC interventions in higher education.

Search and Screening Process

Once the parameters were established, the author conducted a search and screening process at the beginning of Spring 2020 with support from a librarian versed in systematic reviews. A comprehensive search was initiated with five major databases in the education field, Education Resources Information Center (ERIC), Education Source, APA PsycInfo, Professional Development Collection, and Academic Search Ultimate. This review's search terms identified for this review resulted through discussions between the author and professors, scanning keywords in articles known by the author. The concepts included in the search were (virtual or online or videoconferencing) and (mentoring or coaching) and (in-service teachers). Then for each database, synonyms and thesaurus terms for each of the concepts were compiled and added to the searches.

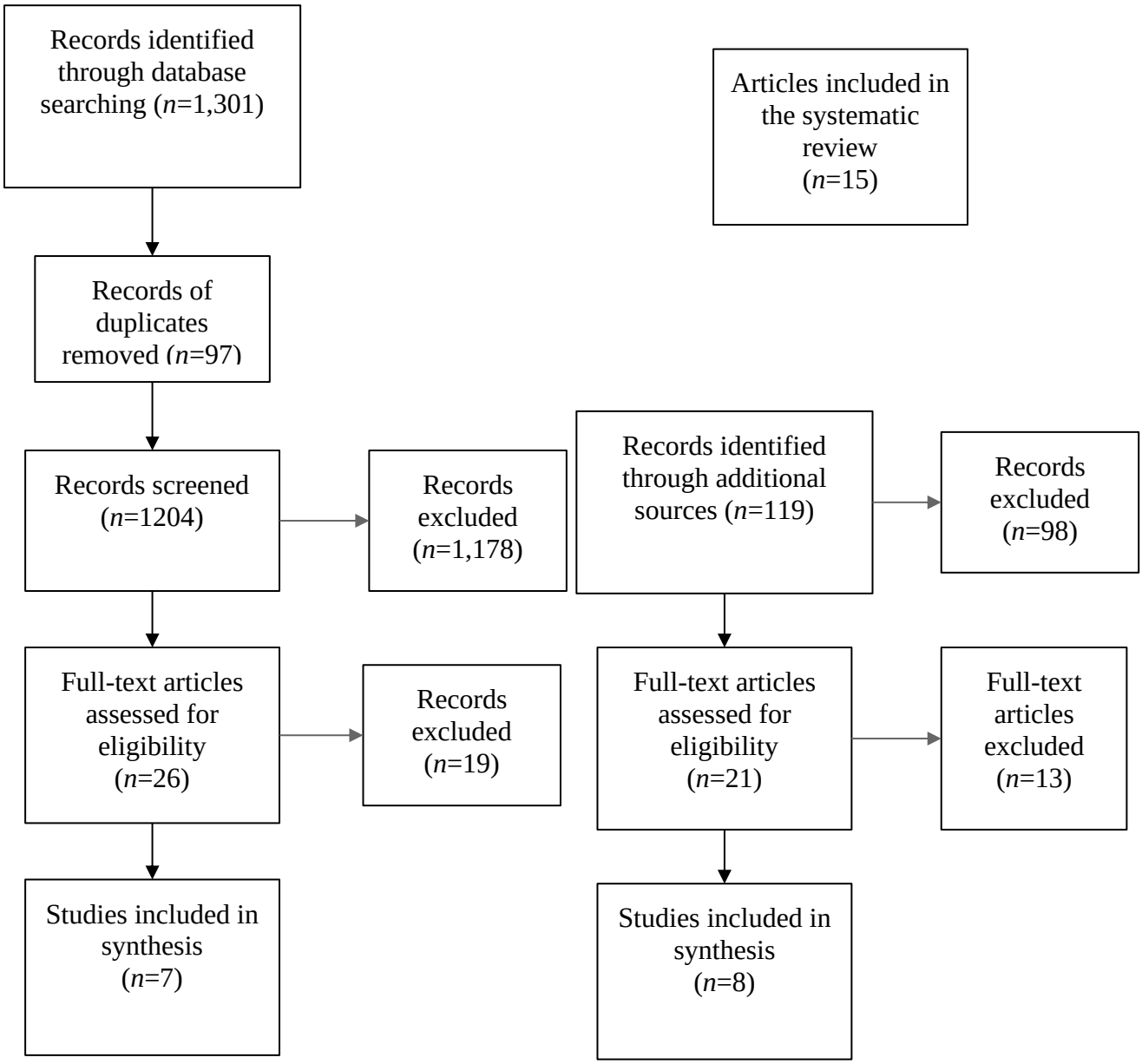
Given that several databases were searched, duplicates resulted. To address this matter, all titles and abstracts were downloaded and imported to Rayyan, a web application used to facilitate and expedite the beginning screening phase of titles and abstracts. After removing duplicate records (N=97), a total of 1,204 articles were collected.

The screening of titles and abstracts began, using the inclusion and exclusion criteria. This screening yielded an overall of 26 articles that met the inclusion and exclusion criteria based on titles and abstracts. The author then exported all 26 articles into RefWorks for a comprehensive review of the full-text level screening. Articles not including a description of the VMC intervention and discussion of teacher outcomes were also excluded, which resulted in 7 articles after this systematic search.

Shortly after this phase (February 10, 2020), a professor shared one of his and colleagues' recent article publications. After screening the title and abstract, the article was exported to RefWorks for a full-text level screening. This resulted in eight articles meeting the inclusion and exclusion criteria. The author then reviewed the eight articles' bibliographies for any potentially relevant articles that fit the inclusion and exclusion criteria. The potentially relevant articles identified (*N*=13) through bibliographies were then sent for re-screening. The full-text level screening was conducted on the 13 articles, which yielded a total of 4 articles that met the inclusion and exclusion criteria. A final search was conducted through Google Scholar, yielding 105 articles, seven of which met the inclusion-exclusion criteria based on titles and abstracts, then sent for full-text level re-screening. The full-text level screening for the Google Scholar articles resulted in three articles that met the inclusion and exclusion criteria. The searches of articles through bibliographies and Google Scholar resulted in a combined total of seven articles that met the inclusion and exclusion criteria at the full-text level screening. In all, a total of 15 articles met the full-text level inclusion and exclusion criteria; therefore, rendering them appropriate for this systematic review analysis.

Figure 1

PRISMA Flowchart Showing the Article's Inclusion of VMC Criteria



Analysis Process

A Google Form was created to capture data from each of the studies relevant to the topic and research questions. Each of the questions in the Google Form was supported by examples and descriptions of how to code the data. Once the form was completed, the author worked with another graduate student familiar with VMC to review the variables that would be coded. The information collected from each study was based on the following characteristics, year, grade-level, context, sample, content, mentors, intervention time, medium, analysis, VMC description, and findings. After reviewing and discussing the form, the analysis process began.

First, the author randomly sampled 25% of the articles (*N*=4) and double coded with the graduate student to establish interrater reliability. The goal of establishing interrater reliability was to ensure the data collected accurately represented the variables measured. Therefore, to determine interrater coding reliability, a calculation of the percent agreement using the following formula: (number of agreements/ (number of agreements + number of disagreements) x100). The percent agreement resulted in a 75% rater agreement. Disagreements were then resolved by discussing the disagreements and reaching a 100% agreement of the 25% of disagreement among the coded variables. After establishing interrater reliability, the author coded all of the remaining articles, and the other graduate student supported increasing accuracy by verifying all coded data. Once the data was organized into tables, the researcher began the interpretation phase.

Table 1 *VMC studies with non-EL teacher samples*

Study	Grade levels	Context	Sample	Content	Mentors	Intervention Time	Medium	Method	Analysis	VMC Description	Key Findings
Pianta et al. (2008)	Preschool	USA, one state; at-risk population	113 teachers (*n*=61 in treatment); (*n*=52 control)	Reading, writing, and social competence	4, consultants experienced in teaching young students and trained in CLASS (observational instrument)	1 year bi-weekly	Synchronous: "video-chat" Additional support: PD	Quantitative: randomized control trial	HLM on class observations (used CLASS)	Observe and identify teacher behaviors, provide non-evaluative and non-judgmental feedback, and problem-solve	Experimental group showed growth across 7 dimensions of CLASS when compared to the control group. Statistically significant differences across three dimensions of CLASS (interactions during reading, responding to cues, differentiation in engaging children, and stimulating LD).
Powell et al. (2010)	Preschool	USA, Midwest state; urban, rural, and small cities	88 teachers (*n*=45 in treatment); (*n*=43 in control)	Reading and writing	3 childhood specialists; master's degree in early childhood; 3-20 years of lead teachers in preschool	7 coaching sessions over 15 weeks (bi-weekly sessions)	Asynchronous: feedback through a disc Additional support: PD	Quantitative: randomized control trial	HLM on classroom observations (used observational instruments)	Observe, assess, and recommend	Teachers in both conditions produced large gains from pre to post-intervention. No statistically significant gains were evident from onsite to remote coaching. Teachers in onsite coaching demonstrated statistically significant gains in code-focused instruction

Table 1 (continued)

Study	Grade levels	Context	Sample	Content	Mentors	Intervention Time	Medium	Method	Analysis	VMC Description	Key Findings
Bang (2013)	Elementary/ Primary School (K-5), Middle School (6-8th)	USA, central midwestern state	15 teachers (*n*=3 in virtual reality, *n*=3 text-text-based, *n*=6 in online face-to-face) (*n*=3 in control)	Science	4 experienced teachers	5 months; one-hour weekly mentoring session	Synchronous: videoconferencing Asynchronous: chatbox	Qualitative: randomized control trial	Case study on pre and post interviews, journal-reflections, and video-recordings	VMC differed across conditions; however, all followed a design, teach, reflect, and devise-plan regarding a science lesson	Experimental group maximized their science teaching and learning by implementing new instructional practices (e.g., picture books, manipulatives) which demonstrated professional growth regarding PCK
(Ruble et al.) 2013	Pre-School, Elementary/ Primary School (K-5)	USA, two mid-southern states	49 teachers (*n*=15 in placebo); (*n*=14 face-to-face); (*n*=15 in web)	Special education	Mentors not specified	1 year; 1.5-hr. sessions (2 in fall, 2 in spring)	Synchronous: videoconferencing	Quantitative: randomized control trial	Quantitative: Mann-Whitney U Test on ratings of classroom observations (mention instruments)	Observe base on targeted objectives and solicit teacher feedback. Then, discuss lesson plans and modify base on discussion and review of the video.	No differences were noted between WEB and FF groups concerning teachers' adherence for implementing teaching practices.

Table 1 (continued)

Study	Grade level	Context	Sample	Content	Mentors	Intervention Time	Medium	Method	Analysis	VMC Description	Key Findings
Bang and Luft (2014)	Middle School (6-8th)	USA; southwest	2 teachers treated	Science	2 mentors with content knowledge and grade level teaching experiences (TE) (over 20 years of TE)	1 year (post 3 to 4 times a week) *posting did not occur always	Asynchronous: discussion forum	Qualitative: case study	Computer-mediated discourse analysis of written dialogues, class observations, phone interviews.	Mentors and mentees collaboratively develop a lesson. Observe the teacher's delivery of lesson plans. Lastly, reflect on the lesson taught collaboratively.	Out of two teachers, one teacher showed more growth regarding changes in curriculum, transfer of knowledge to the classroom, self-evaluation, reflection, and worked towards improvement. Both teachers implemented teaching practices introduced by mentors.
Malanson et al. (2014)	High-School (9-12th)	USA, Massachusetts and Ohio; urban and suburban; diverse population	4 teachers (*n*=3 in treatment); (*n*=1 in control)	Science	1 biomedical scientist	32 hours (2 months x 4 hours/week)	Asynchronous: email, chat box, forum, text-messaging Synchronous: google chat and Skype Additional support: PD	Mixed-Methods: quasi-experimental; qualitative (Note: qualitative analysis for teacher outcomes.)	Analysis of online questionnaires and questioning about lessons during synchronous communication	Teachers receive support before implementation of lessons. Then support during the implementation of the curriculum. Last, reflection stage.	Instructional practices improved as a result of MFF PD intervention (inquiry-based learning and integration of practices such as YouTube videos and case studies). Fidelity of implementation increased due to access to mentors.

Table 1 (continued)

Study	Grade levels	Context	Sample	Content	Mentors	Intervention Time	Medium	Method	Analysis	VMC Description	Key Findings
Vernon-Feagans et al. (2015)	Elementary/ Primary School (K-5)	USA, NC, TX, NM, and NE; rural; low socioeconomic status; diverse population	58 teachers (*n*=14 in control); (*n*=44 in treatment)	Response to intervention (RTI)	7 coaches, 6 doctoral students with TE and one with TE and experience as a reading specialist	1 year bi-weekly (20-30-minute sessions)	Synchronous: videoconferencing Additional support: PD	Quantitative: randomized control trial	HLM on classroom observations; questionnaire	Observe and provide feedback.	Webcam coaching was significantly associated with the teacher's quality of implementation of TRI. Additionally, teachers' perception of their effectiveness in class was statistically significantly higher across webcam coaching.
Jones (2016)	Middle School (6-8th), High-School (9-12th)	USA, FL, MD, VT, NJ, and Teach for America; urban and rural	61 teachers (responded to survey)	Mathematics and science	Experienced STEM teachers and subject specialists with content knowledge serve as coaches.	Time not specified	Asynchronous: chat box and discussion forum	Qualitative	Analysis of survey	Coaches: respond to teacher requests, answer questions, and provide suggestions with resources. Specialists: offer advice regarding classroom management, pedagogy, and subject content.	Surveys demonstrated that teachers improved instructional practices and integrated research-based lessons that included activities, videos, and power points.

Table 1 (continued)

Study	Grade levels	Context	Sample	Content	Mentors	Intervention Time	Medium	Method	Analysis	VMC Description	Key Findings
Nugent et al. (2016)	All grade-levels (K-12)	USA, Nebraska, and Iowa; rural	124 teachers (*n*=63 treatment); (*n*=61 in control)	Science	Mentors characteristics not specified	6-8 weeks (one-hour sessions, 1-2 sessions a week)	Synchronous: videoconferencing Additional support: PD	Quantitative: randomized control trial	Linear regression of video lessons (used observational instru-ment), and three surveys	Joint planning, action/practice, class observa-tion, reflection, and feedback	Teachers in the treatment condition had statistically significantly higher results across all teacher outcomes. PD, when supported by coaching, contributed to increase in teachers' professional growth, major contribu-tions were due to PD.
Richardson (2017)	Elementary/ Primary School (K-5)	USA, southwest Missouri; urban	3 teachers (2 teachers, 1 reading interventionist)	Reading and writing	Two layer: 1 coach, mentored all 4 partici-pants. In phase 2, the coach continued coaching campus coach and interven-tionist. Teachers were then only coached by campus coach.	8 weeks (1-2 hours per week)	Synchronous: videoconferencing Additional support: PD	Qualitative: Case Study	Content analysis of written analysis, teacher-reflections, pre and post conference notes, and interviews	Teachers and coaches meet before VMC intervention to discuss teacher goals. Then teacher reflects on classroom observation while coach prepares for VMC. Then both meet to reflect on classroom observation.	Three categories: reflective prompting, consultation, and rehearsals, were most influential in decision-making; thus, improving professional capital across teachers.

Table 1 (continued)

Study	Grade levels	Context	Sample	Content	Mentors	Intervention Time	Medium	Method	Analysis	VMC Description	Key Findings
Carmouche et al. (2018)	Middle School (6-8th)	USA, Southern; metropolitan city	3 teachers	Special education	one, researcher/author	4 weeks (3 sessions, 20 minutes per session)	Synchronous: videoconferencing Additional support: PD	Quantitative: Visual analysis	Analysis of classroom observation, and survey.	Coaching sessions occurred after classroom observations. Coach then provided specific feedback and prompted self-evaluation. based on observations and instrument data.	All three teachers increased in Opportunities to Respond (OTR) from baseline to intervention and maintenance of the evidence-based practices after PD and VC. Additionally, teachers commented on their improved practices.
Gilbert (2018)	Elementary/ Primary School (K-5)	USA; urban	6 teachers treated	Science (e.g., biology, chemistry, physics)	Mention of one coach	3 months (1 month-F2F, 1 month=asynchronous discussions, & 1 month=synchronous discussion)	Synchronous: teleconferencing Asynchronous: email Additional support: PD	Mixed-methods: qualitative (Note: quantitative analysis for teacher outcomes.)	ANOVA on surveys, coaching logs, and classroom observations (used observational instrument)	Observe, assess, provide written feedback, the teacher responds to feedback, then the teacher and coach discuss and devise an action plan.	Mean differences for questioning and facilitation of discourse strategies were higher in online mentoring as opposed to F2F. Teachers did not show statistically significant differences across formats in their questioning and facilitation of discourse strategies in the classroom.

Table 1 (continued)

Study	Grade levels	Context	Sample	Content	Mentors	Intervention Time	Medium	Method	Analysis	Study	Grade levels
Matsumura et al. (2019)	Elementary/ Primary School (K-5)	Study 1: Mid-Atlantic region, large urban district; Study 2: Mid-Atlantic and Northeastern region	15 teachers (received intervention) Study 1: 7 teachers Study 2: 8 teachers	Reading	experience in coaching and TE	half a year (two coaching cycles approximately one hour and 30 minutes each)	Asynchronous: phone-conference, email, discussion forum Additional support: PD	Mixed methods-qualitative	Thematic analysis of interviews Paired-samples *t*-test and HLM of classroom observation instruments Descriptive statistics of survey.	Coach and mentee meet to discuss goals and pedagogy aligned with framework. Coach observes video and provides feed-back related to specific practices. The coach then submits a video to teacher with reflective comments and questions. Teacher and coach then meet to discuss and reflect.	Improvements reported in instructional practices. Significant changes in teachers' implementation of instructional practices (i.e., questioning, accountable talk, and rigor of student contributions) were observed.

Table 2
VMC studies with EL teacher samples

Study	Grade levels	Context	Sample	Content	Mentors	Intervention Time	Medium	Method	Analysis	VMC Description	Key Findings
Leighton et al. (2018)	Elementary/ Primary School (K-5)	Northeast, USA; urban schools; diverse population	one teacher treated	Reading and writing	one university-based literacy coach	14 weeks	Synchronous: videoconferencing Asynchronous: email, text messaging, video-viewing Additional support: PD	Qualitative	Analysis of email exchanges, virtual meetings, text messages, and coaching video observations	Coaching consisted of three phases that allowed the coach and mentee to analyze problems, brainstorm, try-out solutions, then refine these ideas based on classroom interactions.	Overall, increased confidence in instruction delivery. Instructional practices such as explicit talk, questioning, small group discussions, and facilitation from large group to small group debriefing improved.
Tang et al. (2020)	Elementary/ Primary School (K-5)	USA, Texas; diverse population	75 teachers (*n*= 38 in treatment); (*n*=37 in control)	Reading and writing	experience in bilingual, science, and extensive TE	1 year, (3 sessions)	Synchronous: videoconferencing Additional support: PD	Mixed methods: randomized control trial; qualitative	*t*-test on classroom observations (used observational instrument) Thematic analysis of focus group session	Mentor virtually observed real-time classroom instruction and provided feedback related to components in intervention.	Teachers in the treatment condition scored significantly higher in various areas (e.g., leveled questioning, ESL strategies concept, affective and cognitive feedback) compared to teachers in the control condition. A focus group session demonstrated teachers improved implementation of instructional practices.

Findings

As mentioned earlier, the search yielded 15 articles that met the full-text level inclusion and exclusion screening-criteria for the systematic review. Of the 15 articles, 13 analyzed teachers of non-ELs (92%), and 2 (13%) teachers of ELs in their samples. The studies that analyzed teachers of non-ELs made no mention of ELs in their studies; therefore, they were classified as studies with teachers of non-ELs. One study was classified as analyzing teachers of ELs due to the high proportion (65%) of ELs in the teacher's classroom and teacher's qualifications (ESL). However, we should emphasize that the study's purpose was not necessarily to support teachers of ELs; the focus was to support the teachers' professional growth regardless of the student population. Subsequently, we discuss teacher outcomes and how VMC was implemented. We report findings for each of the questions by combining both groups of articles due to the limited number of studies representing teachers of ELs and to efficiently report our findings.

Teachers Outcomes

To answer research question one (How do virtual mentoring and coaching interventions affect teachers' professional growth, including teachers of ELs?), we noted patterns in the reported findings. All but one article with teachers of non-ELs (Ruble et al., 2013) reported positive teacher outcomes. This study examined differences between online and face-to-face mentoring or coaching, and no statistically significant differences were noted across the modalities. In two other studies (Gilbert, 2018; Powell et al., 2010), the researchers examined differences across modalities and found no statistically significant differences but gains in professional growth across teachers in both conditions. Overall, the studies that did not report statistically significant differences were related to differences across modalities. The majority of

the articles differed in the professional outcomes expected by teachers receiving VMC intervention. Nevertheless, all studies focused on supporting teachers' professional growth across various areas. All articles are discussed below.

Quantitative Studies: Teacher Outcomes

Altogether studies following a quantitative approach were composed of teachers of non-EL samples. Eighty-three percent of quantitative studies reported positive professional growth changes for teachers receiving VMC (Carmouche et al., 2018; Nugent et al., 2016; Pianta et al., 2008; Powell et al., 2010; Vernon-Faegans, 2010). Two of the quantitative studies (Powell et al., 2010; Ruble et al., 2013), examined the differences across modalities. In these studies, the researchers found no statistically significant differences across modalities. However, in one of the studies, (Powell et al., 2010), researchers reported that teachers across both modalities showed gains in professional growth. The gains across both conditions coupled with lack of statistical significance across modalities indicated that teachers in both conditions did not differ in their pedagogical practices, which means that mentoring or coaching was effective irrespective of modality.

Of all six quantitative studies, in only one study (Ruble et al., 2013) the researched did not report positive teacher outcomes. In Ruble et al.'s study (2013), the researchers focused on supporting teachers of children with autism by mentoring and coaching them to implement evidence-based practices. In this study, researchers found no statistically significant differences between teachers receiving face-to-face coaching and mentoring and VMC concerning teachers' adherence to evidence-based practices. Moreover, no gains were noted across conditions after receiving the VMC. Unlike Powell et al. (2010), the researchers reported an increase in teachers' professional growth. Although, there were no statistically significant differences that indicated

VMC was more effective than face-to-face coaching, teachers across both conditions did demonstrate an increase in their outcomes. Overall, this is the only study (Ruble et al., 2013) that did not report positive teacher outcomes.

In several studies following quantitative analysis (Carmouche et al., 2018; Nugent et al., 2016; Pianta et al., 2008; Vernon-Faegans, 2010), researchers reported positive teacher outcomes of online mentoring or coaching. For example, studies like Nugent et al. (2016) and Pianta et al. (2008) found statistically significant changes in teachers' pedagogical practices due to VMC. However, among these two studies, Nugent et al. (2016) reported PD intervention effects, whereas Pianta et al.'s study was solely based on VMC. For example, Nugent et al. (2016) quantitatively measured and compared teachers' professional growth related to theoretical knowledge, beliefs, self-efficacy, and classroom measures; and found that teachers in the treatment condition had reported statistically significant higher results across all teacher outcomes with large effect sizes for two data collections points, beliefs and self-efficacy. For example, there was a large effect size (d= 1.03) from baseline through PD and coaching for teachers' beliefs. However, in this study, Nugent et al. (2016) reported that significant contributions in teacher outcomes were attributed to PD.

Other studies found significant changes in teachers' professional growth as a result of VMC. For example, Vernon-Feagans (2015) quantitatively measured and compared implementing a targeted reading intervention (TRI) of elementary teachers participating in bi-weekly 20-30-minute VMC sessions. Regardless of condition, the participants received extended PD through summer institute and PD related to their needs, literacy coaching support, and access to the TRI website. Teachers in the treatment received real-time feedback as they worked one-on-one with struggling students. Analysis of teachers' classroom observations yielded

statistically significant changes in the experimental group's TRI implementation with large effect sizes of d=.95. Similarly, Carmouche et al. (2018) reported increases in teachers' implementation of evidence-based practices from baseline to intervention and maintenance after PD and VMC intervention. In both of these studies, PD intervention effects were not analyzed. Nugent et al. (2016) are the only researchers in this review that analyzed PD and VMC's individual effects on teachers' professional growth.

Qualitative Studies: Teacher Outcomes

Other researchers qualitatively noted how a VMC intervention affected teachers' professional growth. The subsequent studies showed positive teacher outcomes (Bang, 2013; Bang & Luft, 2014; Jones, 2016; Leighton et al., 2018; Malanson et al., 2014; Richardson, 2017). These outcomes were reflected in teachers' instructional practices, self-evaluation, reflection, and decision-making. More specifically, the following researchers centered their interventions around pedagogical practices (Bang, 2013; Jones, 2016; Leighton et al., 2018 Malanson et al., 2014;). For example, Bang (2013) found that teachers maximized their science teaching and implemented new instructional practices. These practices demonstrated professional growth regarding pedagogical content knowledge – knowledge that goes beyond subject matter; it is the way one represents and formulates the content to make it comprehensible for the students, which may be based on theory or practice (Shulman, 1986). Similarly, Jones (2016) found that teachers improved instructional practices and implemented research-based lessons. In this study, an online platform with "immediate and customized mentoring for STEM [teachers] through multiple tiers of web-based support, to enhance teachers' practice…" was developed (p. 273). Teachers commented on how questions to important answers had been answered, and

support received, "... [received] support on dealing with students who are not motivated to learn." (p.281).

Among the studies that centered their intervention around pedagogical practices, Malanson et al. (2014) developed a PD and VMC intervention to support teachers' instructional practices and inquiry-based learning. In this study, the researchers found that instructional practices improved as a result of VMC. However, the researchers provided teachers with PD and VMC, and specific improvements in instructional practices were solely focused on one intervention over the other. In the same way, Leighton et al. (2018) reported improvements in one teacher's instructional practice, such as explicit talk, questioning, and facilitation of small and large group discussions resulting from VMC. However, it should be noted that the teacher in this study received PD before VMC, but the findings were only attributed to VMC. In this study, Leighton et al. (2018) worked with an ESL teacher with a high proportion of ELs in the classroom. The VMC focused on the teacher and mentee's instructional goals, which aligned with language and literacy. Over 14 weeks, the teacher saw improvements in students' discourse due to her instructional practices, "I like the idea of doing small groups… (p. 44)." After weeks of problem-solving and implementing instructional practices suggested by the mentor, the teacher began to see changes in her classroom, "There is so much good stuff going on from our latest discussion and writing (p. 47)." Other qualitative studies showed positive teacher outcomes related to teachers' increase in confidence (self-efficacy), self-evaluation, reflection, and decision-making (Bang & Luft, 2014; Richardson, 2017). Across these qualitative studies, only three studies provided additional support from VMC (Leighton et al., 2018; Malanson et al., 2014; Richardson, 2017).

Quantitative and Qualitative Study: Teacher Outcomes

Lastly, two studies quantitatively and qualitatively reported favorable teacher outcomes (Matsamura et al., 2019; Tang et al., 2020). For example, Tang et al. (2020) quantitatively reported BIL teachers scoring significantly higher and noted medium to large effect sizes compared to teachers in control conditions across various areas, student involvement (Cohen's *d*=2.25), teacher time vs. student time (Cohen's *d*=.73), leveled questioning (Cohen's *d*=.53), ESL strategies (Cohen's *d*=.65), affective and cognitive feedback (Cohen's *d*=.57), and physical environment (Cohen's *d*=.66), as a result of virtual professional development (VPD) and VMC. Additionally, researchers qualitatively reported positive teachers' perceptions regarding the interventions. Teachers shared their improvement regarding their professional growth; for example, a teacher shared, "It has … helped me with my questioning…" (Tang et al., 2020, p. 120). Another teacher shared, "Feedback is always useful to improve my teaching strategies." (Tang et al., 2020, p. 119). Overall, across both quantitative and qualitative, researchers reported positive teacher outcomes.

Virtual Mentoring and Coaching Facets

To answer research question two (What notable trends exist in virtual mentoring and coaching that most affected teachers' professional growth?), we noted patterns in characteristics of VMC across all studies and their reported findings. Due to the limited number of studies with teachers of ELs, we will discuss trends in VMC as a whole with teachers of non-ELs and ELs. We further discuss key findings from the articles.

Before addressing trends in VMC interventions related to teachers' professional growth, we discuss how VMC interventions differ across groups of articles. More specifically, we reviewed the VMC protocol teachers received (i.e., observe, assess, and recommend or respond

to teacher requests) and the medium of delivery (i.e., synchronous or asynchronous). Hence, we were primarily interested in the VMC intervention method, as described by the researchers.

Virtual Mentoring and Coaching Interventions

All studies differed in their VMC protocol; however, many followed a variation of an observe, assess, feedback sequence. Other studies followed a similar protocol but involved the teacher in mentoring and coaching by seeking feedback before, during, or after the VMC intervention. Furthermore, other studies mention mentors and mentees collaborating to devise a plan to address their classroom observations' feedback or suggestions.

The majority of studies followed a variation of observing, assess, and feedback sequence (Carmouche et al., 2018; Tang et al., 2020; Powell et al., 2010; Vernon-Feagans, 2015). In the following studies, mentors could go directly into observing classroom observations due to teachers receiving additional support before mentoring and coaching (e.g., PD). For example, Tang et al.'s (2020) study centered their intervention on VPD, followed by VMC focused on the curriculum teachers in the treatment group employed. The VPD outlined and scripted various areas such as reviewing upcoming lessons, reflecting on practices and student learning, ESL instructional strategies. Following the PD, teachers in the treatment condition received VMC. The VMC followed an observe-feedback protocol. In this study, the mentors virtually observed real-time classroom instruction and provided feedback related to components in the intervention. Similarly, Powell et al.'s study (2010) provided teachers with a two-day professional development focused on the intervention content and guided discussion of evidence-based practices as they relate to literacy. Mentors then had the opportunity to observe classroom observations focused on teachers' implementation of the PD intervention content. After that, mentors provided specific feedback regarding improvements related to the intervention content.

Similarly, Carmouche (2018) included a PD phase before the intervention, which "used a combination of lecture, role-playing, and videos that demonstrate in-class use of OTR, benefits of OTR, and how teachers can increase OTR in their classroom" (p. 137). Teachers then submitted classroom observation videos and received specific feedback as it related to the intervention.

The following studies delved deeper from an observe, assess, and feedback protocol by seeking teachers' feedback before or during the VMC intervention (Bang, 2013; Bang & Luft, 2014; Gilbert, 2018; Leighton et al., 2018; Nugent et al., 2016; Matsumura et al., 2019; Richardson, 2017). For example, Nugent et al. (2016) describe mentors and mentees in joint action in each of the five phases of the VMC intervention. In phase one, collaborative planning, mentors and mentees collaborated before and during the implementation. For phase two, action/practice, teachers implemented new/existing skills discussed in phase one. In phase three, observation consisted of mentors or mentees observing one or the other's instructional practices. Reflection, phase 4, involved mentors and mentees analyzing patterns in light of new or intended outcomes. Lastly, phase five, feedback, involved mentor and mentee, reflecting on observations, and joint feedback.

Similarly, in Matsumura et al. (2019), the coach and mentee met before implementation to discuss goals and pedagogy aligned with the framework. The coach then observed classroom observations and provided feedback based on the framework dimensions related to specific pedagogical practices to reflect with mentees. Additionally, they posed thoughtful comments and questions for mentees to respond to. Lastly, the mentee and coach then meet to review and discuss mentees' feedback regarding the classroom observation and reflect once again. In these quantitative and qualitative studies, mentees seemed to show better professional outcomes, such

as implementing instructional practices and reflective-thinking when involved in the VMC process.

In other studies, in addition to the observe, assess, and feedback sequence, mentees and mentors devised a plan or problem-solved before, during, or after implementation (Bang, 2013; Gilbert, 2018; Leighton et al., 2018; Pianta, 2008; Pianta et al., 2008; Ruble et al., 2013). For instance, Pianta et al.'s (2008) study with preschool teachers provided teachers with the opportunity to work together to plan for future instruction based on classroom observation feedback. Similaryly, in Bang's (2013) study, mentors and mentees collaboratively designed a science lesson within the following virtual platforms: avatar-to-avatar, text-to-text, or online face-to-face. After collaborations, mentees taught the lesson within their classroom then reflected with their mentor. These reflections lead to devising a plan for future implementation. Overall, a high proportion of studies (80%) implementing a problem-solving phase for future implementation reported some favorable teacher outcomes (Bang, 2013; Gilbert, 2018; Leighton et al., 2018; Pianta et al., 2008;).

Method of Delivery

As mentioned previously, VMC can be classified as synchronous or asynchronous. Synchronous communication is in real-time, which is delivered through some form of videoconferencing. On the contrary, asynchronous communication is delayed and can be delivered through emails, discussion forums, or chat boxes. In the following studies, we noted patterns regarding the type of delivery and their reported findings.

A high proportion (47%) of studies followed a synchronous approach to provide VMC interventions (Carmouche et al., 2018; Nugent et al., 2016; Pianta et al., 2008; Richardson, 2017; Ruble et al., 2013; Tang et al., 2020; Vernon-Feagans, 2015). In these studies, mentors and

mentees could see one another through some form of video conferencing to mentor and coach. All but one study (Ruble et al., 2013) reported positive findings regarding teachers' professional growth.

Other studies (26%) followed an asynchronous approach. In these studies, VMC interventions between mentors and mentees occurred through online platforms such as chat boxes or emails (Bang & Luft, 2014; Jones, 2016; Matsumura et al., 2019; Powell et al., 2010). For instance, in Powell et al.'s (2010) study, mentors provided written feedback through a disc. The disc was embedded in a software that allowed the mentee to review feedback in a split-screen arrangement. In this arrangement, mentees observed feedback on one side of the screen and video segments corresponding to the feedback. In another study, mentees had access to mentors through chat boxes and discussion forums (Jones, 2016).

Another 13% of studies followed a combination of synchronous and asynchronous methods to meet with mentees (Leighton et al., 2018; Malanson et al., 2014). For example, in Leighton et al.'s study (2018), the mentor and mentee used different forms of technology to communicate, such as email, facetime, and text messages, to increase the consistency of interactions. Both of these studies showed positive teacher outcomes regarding the implementation of instructional practices.

Two additional studies (13%) implemented more than two synchronous and asynchronous methods (e.g., avatar-to-avatar, text-to-text, videoconferencing), as their purpose was to measure and compare differences across different types of VMC. For example, Bang (2013) measured and compared different VMC (i.e., avatar-to-avatar, text-to-text, and online face-to-face) across different groups of teachers. Researchers qualitatively reported positive findings for teachers in the treatment (avatar-to-avatar, text-to-text, and online face-to-face) vs.

control (offline mentoring) conditions. Gilbert (2018) employed a study to compare teacher outcomes as the same group of teachers transitioned from synchronous, asynchronous, and face-to-face interventions. In this study, teachers did not show statistically significant differences across formats. However, mean differences for some instructional practices (i.e., questioning and facilitation of discourse) were higher in online mentoring than face-to-face—both of these studies employed VMC across various methods to study differences across formats.

Studies Research Design Comparisons

To answer research question three (How do studies contrast in their research design?), we reviewed the context and research designs. We report our findings by combining all studies to present results efficiently.

Articles in urban settings were highly represented in this review (Gilbert, 2018; Leighton et al., 2018; Matsumura et al., 2019; Richardson, 2017). The second highest represented was a mix of urban and rural settings (Jones, 2016; Malanson et al., 2014; Powell et al., 2010). Studies with rural settings comprised (14%) of the overall studies (Nugent et al., 2016; Vernon-Feagans, 2015). Other studies represented at-risk populations (Pianta et al., 2008); low-socioeconomic status (Vernon-Feagans, 2015); and diverse populations (Leighton et al., 2018; Malanson et al., 2014; Tang et al. 2020; Vernon-Feagans, 2015).

Articles with elementary students (K-5) were also highly represented in this study (60%: Bang, 2013; Gilbert, 2018; Leighton et al., 2018; Matsumura, 2019; Nugent et al., 2016; Richardson, 2017; Ruble et al., 2013; Tang et al. 2020; Vernon-Feagans, 2015). Other articles contained studies conducted with preschool students (Pianta et al., 2008; Powell et al., 2010; Ruble et al., 2013). At the same time, other articles included high school (Malanson et al., 2014) or middle school (Bang & Luft, 2014; Carmouche et al., 2018). The remaining studies contained

a mix of different education periods (Bang, 2013; Jones, 2016; Nugent et al., 2016; Ruble et al., 2013). For example, Nugent et al.'s (2016) study contained students from elementary to high school. Similarly, Jones (2016) worked with teachers of students in middle to high school. Notably, articles with teachers of elementary students were the most researched.

Research Designs

Research designs employed in these studies differed in many ways. First, studies following a synchronous communication used randomized control trial designs more frequently (71%: Nugent et al., 2016; Pianta et al., 2008; Ruble et al., 2013; Tang et al., 2020; Vernon-Feagans, 2015) than studies following asynchronous communication (17%: Powell et al. 2010). Second, articles varied in the sessions they conducted, if at any. Forty percent of articles contained studies that collected data from a span of 2-4 sessions (Carmouche et al., 2018; Matsumura et al., 2019; Ruble et al. 2013; Tang et al. 2020), 40% collected data from a span of 5-8 sessions (Malanson et al., 2014; Nugent et al., 2016; Powell et al., 2010; Richardson, 2017), while other studies collected data between 12-15 sessions (20%: Pianta et al., 2008; Vernon-Feagans, 2015; Bang, 2013). For other studies, time was not specified due to sessions occurring over discussion forums or chat boxes (Bang & Luft, 2014), no precise specification of the number of sessions (Jones, 2016; Leighton et al., 2018), or complexity of study due to mentees receiving three types of interventions (Gilbert, 2018). Another aspect that differed was the training of mentors/coaches. A few articles discussed the training of mentors/coaches (Bang & Luft, 2014; Nugent, 2016; Vernong-Feagans, 2015). Other studies capitalized on mentors/coaches experience in training coaches (Leighton et al., 2018; Matsumuru et al., 2019; Richardson, 2017). Third, qualitative studies employed asynchronous communication more frequently (40%: Bang & Luft, 2014; Jones, 2016) than quantitative studies (20%: Powell et al.,

2010). Lastly, studies employing synchronous and asynchronous communication reported findings qualitatively more frequently (75%: Bang, 2013; Leighton et al., 2018; Malanson et al., 2014) than quantitatively (25%: Gilbert, 2018).

Measures

Measures of teachers' professional growth varied across studies. Therefore, we became interested in how VMC interventions measured teachers' professional growth. As a result, we noted patterns in the measures and instruments implemented in these studies.

Several articles relied on one measurement reflective of teachers' professional growth. For example, some articles considered classroom observations as their sole predictor of teachers' growth (Pianta et al., 2008; Powell et al., 2010; Ruble et al., 2013). While other studies only used surveys or questionnaires as their measurable variable (Jones, 2016). For example, Pianta et al. (2008) quantitatively analyzed teachers' professional growth through classroom observations. In their study, the researchers used a validated instrument, Classroom Assessment Scoring System (CLASS), to "improve specific dimensions of teachers' observed classroom interactions" (p. 437). Similarly, Jones (2016) implemented one measurement variable reflective of teachers' professional growth survey.

While other studies measured teachers' professional growth through two or more measurements such as classroom observations, interviews, or surveys or questionnaires (Carmouche et al., 20108; Gilbert, 2018; Leighton et al., 2018; Matsumura et al., 2019; Nugent et al., 2016; Richardson, 2017; Tang et al., 2020; Vernon-Feagans, 2015). For example, Tang et al. (2020) used the Teacher Observation Record (TOR) to rate bilingual teachers' delivery of ESL instruction. Additionally, the researchers conducted a focus group session to investigate

teachers' perceptions of their instructional quality. Studies like Matsumura et al. (2019) analyzed teachers' professional growth through classroom observations, surveys, and interviews.

Discussion

The purpose of this systematic review was to consider 20 years (2000-2020) of articles conducting VMC interventions in the U.S. across any area while comparing articles with studies working with teachers of non-ELs and ELs. However, the inclusion and exclusion criteria narrowed the studies included in this review (2008-2020). Additionally, due to the limited number of studies with teachers of ELs, we were unable to compare articles across groups, so we compared articles in terms of outcomes, interventions, and research designs. The findings allowed us to (a) see changes in VMC integration over 20 years, (b) synthesize findings in terms of current understandings regarding VMC, and (c) provide researchers with directions for future research in VMC for teachers of ELs and non-ELs.

Development in Virtual Mentoring and Coaching Interventions Over the Years

In this section, we discuss trends in research for over 12 years. We intended to analyze changes over 20 years; however, articles meeting the inclusion/exclusion criteria were only retrieved as early 2008. Nevertheless, we were keenly interested in examining VMC interventions from theory to implementation across different areas (e.g., literacy, special education, ELs). We discuss studies as a whole in terms of their historical context regarding the implementation of VMC interventions.

In terms of purpose, the first researchers in their respective areas were concerned with whether VMC supported teachers' professional growth. The first study in this literature review was concerned with observing changes in teachers' observations due to VMC (Pianta et al., 2008). The focus on the bigger idea of VMC's role in supporting teachers' professional growth

guided this research. Similarly, Powell et al. (2010) analyzed and compared the differences between face-to-face and VMC. The focus was to analyze the role VMC had on teachers' professional growth regarding literacy. These studies are among the first articles to examine VMC's effects; therefore, conclusive findings on the effect of VMC were not established. Instead, the researchers contributed to the research by acknowledging VMC interventions' promising outcomes as a promising alternative to onsite mentoring and coaching (Pianta et al., 2008; Powell et al., 2010).

These articles laid the foundation for the latter set of research across different areas. For example, Matsumura et al.'s study (2019) was guided by various researchers, some being Pianta et al. (2008) and Powell et al. (2010). In their study, researchers studied the effect of VMC on teachers' professional growth and concluded that VMC was indeed a tool that could improve teaching quality. Similarly, Nugent et al. (2016) further contributed to their area, science, by analyzing and comparing face-to-face coaching and VMC differences. In this study, the researchers provided teachers with PD focused on evidence-based instructional practices in science. Providing VMC in addition was hypothesized to promote the transfer of skills to the classroom. Similarly, researchers concluded that technology was effective and efficient in providing teachers with coaching support (Pianta et al., 2008; Powell, 2010; Nugent et al., 2016).

Lastly, research trends regarding theories are unclear in these articles. The first and last studies in this review move directly into the methods of the study. A few articles followed a theory to provide insights into the development of VMC interventions (Bang, 2013; Bang & Luft, 2014; Nugent, 2016; Richardson, 2017; Gilbert, 2018). For example, Bang (2013) is the first article in this review that uses theory to provide insight on learning development in a

situated learning environment. A strong theoretical framework would support developing VMC interventions that enhance teachers' understanding of a given area.

Researchers' Understandings of Virtual Mentoring and Coaching

Subsequently, we discuss findings based on the different methods employed by researchers from qualitative to mixed-methods. The articles in this systematic review provide an understanding that contributes to the literature; however, more studies that make decisive decisions on elements of VMC that support teachers' professional growth are necessary. Nevertheless, these findings can provide researchers, practitioners, and policymakers with guidance regarding VMC interventions to promote professional growth.

Based on the overall findings, employing VMC interventions can foster teachers' professional growth across various areas. These interventions have come to fruition when face-to-face support becomes challenging due to various factors such as lack of resources or distance. In these situations, VMC has provided mentors the flexibility to reach mentees in remote areas or schools with minimal resources (Gilbert, 2016; Matsamura et al., 2019; Nugent, 2016). Most importantly, teachers seem to benefit from VMC and use that feedback to improve instructional practices (Bang, 2013; Bang & Luft, 2014; Jones, 2016; Vernon-Feagans, 2015). In addition, when VMC supported by prior or ongoing PD appears to play a positive role in teachers' professional growth (Carmouche et al., 2018; Leighton et al. 2018; Malanson et al., 2014; Matsumura et al. 2019; Nugent et al., 2016; Pianta et al., 2008; Richardson, 2017). However, only one study (Nugent et al., 2016) discussed the effect of PD and virtual mentoring on teacher's professional growth. This means that all other studies (Carmouche et al., 2018; Leighton et al. 2018; Malanson et al., 2014; Matsumura et al. 2019; Pianta et al., 2008; Richardson, 2017; Tang et al., 2020) that provided in-service teachers with PD and VMC, it is

unclear as to which provided the most significant impact on teachers' professional growth. As seen in Nugent et al. (2016) study, analyzing the interventions separately and combined would provide a better picture of which intervention had the most significant impact on teachers' professional growth. Further research examining PD and mentoring or coaching online individual and combined effects would better explain the impact on teachers' professional growth, thus impacting future training developments.

Lastly, from this review, we begin to see VMC's implementation across various areas; however, specific elements of VMC have yet to be studied. The majority of studies in this review have made gains in studying the implementation of VMC. However, many have yet to begin considering specific elements of what makes VMC effective. In this review, one article discussed implementing many evidence-based elements of PD identified through the literature as high-quality PD (e.g., modeling and practice with guided feedback) (Nugent et al., 2016). However, these evidence-based elements are based on PD, not VMC. The researchers also concluded that specific elements of the VMC coaching process or time in each phase of mentoring or coaching are necessary. Although effective features of traditional mentoring and coaching could be effective in online settings, there must be specific features necessary in VMC. For example, quality feedback via online, immediacy, or delayed feedback should be investigated to understand their impact on teachers' professional growth. According to Nugent et al. (2016), "a necessary next step is to "unpack" the coaching intervention by operationalizing critical coaching elements and identifying which key components are most important in leading to desired outcomes" (p. 32). Therefore, the primary problem with studies not reporting statistically significant effects for teachers receiving VMC may be that researchers do not discuss implementing evidence-based elements of PD. This means that there is no complete

understanding of the specific features that positively or negatively support teachers' professional growth, which has implications for future VMC developments.

Pedagogical Implications

Given what we have discussed, practitioners should consider implementing VMC in their schools to support teachers' professional growth. However, educators should understand that integrating VMC is not the sole variable in improving teachers' growth. Instead, VMC is a tool that can support practitioners when resources such as mentors/coaches or funds are limited. Furthermore, a tool developed through many specific elements (e.g., method of delivery, number of sessions, training of mentors/coaches) can support the intervention's effectiveness.

Practitioners should also consider teachers' preferences regarding technology. In Richardson's study (2017), the teachers had challenges with VMC, so a combination of virtual and face-to-face coaching was provided. Similarly, both synchronous (i.e., videoconferencing) and asynchronous (i.e., email, text messaging) communication was employed to support teachers' professional growth.

Finally, as we noted previously, positive teacher outcomes were observed in studies where teachers received additional support like PD training. Therefore, mentors should consider the anticipated and feasible growth at different phases of the VMC intervention. Only expecting VMC interventions to solidify teachers' understanding of aspects discussed in VMC is not enough. VMC interventions should be purposefully planned and provide additional support to foster teachers' growth (Nugent, 2016). For example, teachers receiving VMC for the first time in an unfamiliar area may demonstrate growth at different intervention phase. Therefore, practitioners should consider teachers' understanding of a concept and be prepared to spend more time in the different phases.

Future Research on Virtual Mentoring and Coaching for Teachers Professional Growth

The opportunities for future research in the area of VMC are vast. Currently, the literature regarding VMC for teachers continues to be limited in various areas. Nonetheless, researchers in the area of VMC have made enormous contributions to a previously non-existent area. Overall, researchers can focus on specific elements that make their study successful. For example, by analyzing elements such as duration or mentor's expertise and their effect sizes, researchers can better understand elements that need to be considered to maximize teachers' learning when providing VMC.

Additionally, researchers embedding PD with VMC should continue analyzing the combined effect of PD and VMC and consider individual effects. Others providing additional support such as PD or resources could address the elements of interventions that support teachers' professional growth. To this end, researchers would understand the impact PD and VMC has on teachers' growth.

Researchers interested in employing quantitative methods should consider utilizing more robust research designs. Additionally, researchers employing qualitative methods should expand their research to more rigorous designs that account for and discuss features such as transparency, credibility, or dependability. Among the qualitative studies reviewed, a selected number of articles discuss some of the critical elements necessary for improving the research quality.

Lastly, we discuss future research on VMC for teachers of ELs. First, studies with teachers of ELs were limited, thus affecting the recommendations for future research. However, many areas, such as special education, face similar challenges, yet researchers could implement VMC interventions following others' work (Carmouche et al., 2018). Similarly, Leighton et al.

(2018) and Tang et al. (2020) have begun contributing to the literature regarding VMC for teachers of ELs.

Limitations

We have taken the steps necessary to ensure these limitations are restricted; however, even a well carried out systematic review comes with its limitations. First, this study has attempted to gather all studies employing VMC interventions within the last 20 years that fit our inclusion and exclusion criteria. However, even after utilizing various databases in education, hand-searching bibliographies, and seeking experts' knowledge of VMC studies, some articles may have been overlooked. Second, there are many positions one can take when developing a systematic literature review. Our findings are based on our research questions; however, we recognize that other researchers may answer the questions differently in this review which lead to different interpretations. Lastly, this systematic review lacks a quality assessment of each study, therefore limiting this review.

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CHAPTER III UNDERSTANDING THE RELATIONSHIP BETWEEN TEACHERS' IMPLEMENTATION OF PEDAGOGICAL PRACTICES AND ACADEMIC LANGUAGE FOR ENGLISH LEARNERS AFTER VIRTUAL MENTORING AND COACHING

Introduction

Providing English learners (ELs) with an equitable education and supporting teachers is one of the utmost priorities of many policymakers, researchers, and practitioners in the United States. In the context of the U.S., ELs refers to students who come from non-English speaking backgrounds. As the population of students whose first language is not English increases in the K-12 public education system (National Center for Educational Statistics [NCES], 2020), the need to minimize academic achievement gaps (NCES, 2020) and prepare teachers of ELs (Tong et al., 2019) continues to be vital for many. For instance, the amended Every Student Succeeds Act (ESSA) emphasizes ELs' need for an equitable education by qualified teachers that receive ongoing preparation and training (U.S. Department of Education 2015). Similarly, researchers in the realm of English as a Second Language (ESL) and bilingual education continue to analyze and discover ways to support teachers' delivery of instruction (Hoover et al., 2019; Tang et al., 2020; Tong et al., 2017a); which in turn, supports ELs in their academic success (Chu & Hamburger, 2019; Garza et al., 2018; Irby et al., 2018). To fully support ELs, practitioners need to have an in-depth understanding of ELs academic (Huerta et al., 2016; Tang et al., 2020; Tong et al., 2018; Umansky & Porter, 2020), linguistic (Lee & Buxton, 2013; Linan-Thompson et al., 2018; Tong et al., 2008), and cultural needs (Coates, 2016; Linan-Thompson et al., 2018; Powell et al., 2016). While there are initiatives to support teachers working with ELs, teachers lack and feel ill-prepared to support teachers (Villegas, 2018).

Over the years, the U.S. has seen a drastic growth of ELs in public education. At present, ELs account for over 4.9 million of the student population in U.S. public schools (NCES, 2020). Additionally, according to the statistics, in 2017, ELs represented one in every nine students (McFarland et al., 2017, as cited in Villegas, 2018). This population represents a highly susceptible population of students who continue to fall behind in major subject areas such as science, reading, and mathematics (NCES, 2020). Unfortunately, teachers with knowledge of ELs continue to be limited (Umansky & Porter, 2020), which means ill-prepared teachers are abandoned to work with ELs with zero to limited knowledge (Villegas, 2018). These issues pose challenges for providing ELs with an equitable education that addresses their linguistic and content needs vital for their academic growth (Umansky & Porter, 2020). However, with ongoing PD for all mainstream in-service teachers in areas related to ELs' academics, linguistic, and cultural needs, ELs can be closer to receiving an equitable education that addresses their individualized needs for academic growth.

As changes occur in our educational context (i.e., increase in EL population), the necessity to introduce teachers to research-based instructional methods for ELs' academic growth is vital. Hence, researchers continue to study methods to support ELs due to the academic achievement gaps or population increase. However, to cope with ELs' educational demands, teachers need up-to-date training to enrich their knowledge of ELs. While there is a vast amount of research to inform EL instruction, the corpus of this research is not seen in many classrooms that serve ELs (Umansky & Porter, 2020). It is common to disseminate the latest research on methods to be presented through varying types of PDs (e.g., workshops, courses, mentoring, coaching). In the current study, PD refers to the design of structured learning for teachers. In recent years, PD has been mediated through online platforms in what is referred to as e-learning,

ear-in-the-bug, online learning, online mentoring/coaching, virtual professional development (VPD: Tong et al., 2015), or virtual mentoring/coaching (VMC: Irby, 2015). Pianta et al. (2010) were among the first researchers who provided a seminal foundation for integrating online PD platforms to support teachers' development. In this study, the researchers designed a study that provided in-service teachers coaching through an online platform. In this study, teachers in the treatment condition showed growth across various areas addressed in online coaching. Over the years, other researchers have contributed to PDs (e.g., workshops, mentoring, coaching) mediated online across various areas such as science (Jones et al., 2016; Malanson et al., 2014; Nugent et al., 2016), special education (Carmouche et al., 2018), or bilingual education (Tang et al., 2020). Most recently, the work of Tang et al. (2020) has contributed to the initial growth regarding the effectiveness of VMC for teachers of ELs. In this study, researchers reported significant statistically significant changes in teachers' instructional practices due to a combination of the online platform in training and individualized support, VMC. As PDs mediated through online platforms continue to increase to support teachers across various areas, researchers, policymakers, and practitioners need to develop opportunities teachers will highly benefit from.

Purpose of Study and Research Questions

The purpose of this study was to investigate the differences in teachers' ESL strategy (e.g., visual scaffolding, graphic organizer) and academic language implementation during instruction after VMC. We assume that additional support in the form of VMC will have a more significant effect on teacher’s implementation of ESL strategies and use of dense language content. In doing so, we provide researchers, practitioners, and policymakers with research that supports future PD developments for in-service teachers working with ELs, positively impacting

both teachers and students. The data that will answer the research questions include a reliable and valid classroom observational instrument that analyses actions emitted by teachers and students, such as ESL strategies, language content, activity structure and student mode.

We addressed the following questions:

1. What is the difference between treatment and control teacher's implementation of individual ESL strategies when using light language content (e.g., visuals, questioning, academic language scaffolding) as measured by TBOP?
2. What is the difference between treatment and control teacher's implementation of individual ESL strategies when using dense language content (e.g., visuals, questioning, academic language scaffolding) as measured by TBOP?
3. What is the difference between treatment and control teachers' use of light language content according to activity structures and mode as measured by TBOP?
4. What is the difference between treatment and control teachers' use of dense language content according to activity structures and mode as measured by TBOP?

Conceptual and Theoretical Framework

The conceptual and theoretical framework supporting this study lies in understanding the interconnectedness between a theory (transformative learning) and several concepts (mentoring and coaching, online learning, and quality instruction) to support teachers' learning, ultimately impacting students' learning. We present mentoring and coaching as the vehicle used to transform teachers' learning. Additionally, due to the complexity of technology integration to support teachers' learning, we present one other intertwined concept to consider when implementing mentoring and coaching online to transform learning: (a) medium: online learning (e.g., synchronous). Lastly, the idea of this study is to support teachers of ELs, so we discuss

quality instruction as it relates to ELs. The transformative learning theory and its related concepts contribute to understanding how practitioners can be supported in improving quality instruction and learning for ELs.

Transforming Learning Through Mentoring and Coaching

Mentoring and Coaching

Learning through continuing education is present in various settings (e.g., education, medical field) because of its potential to enhance and transform an individual's practices (Glenn, 1997; Rouleau et al., 2019; Sum et al., 2018; Wheeler & Chisholm-Burns, 2018). Although many in-service teachers are well-prepared in their assigned discipline, more preparation to develop appropriate lessons that meet their ELs' needs are presented through continuing education. In the current study, we support in-service teachers' continuous development through mentoring and coaching to transform their perceptions and pedagogical practices as they support ELs. Following, we discuss mentoring and coaching as the tool to transform teachers' learning regarding ELs.

Mentoring and coaching have been widely used over the last centuries to support an individual's development. In the literature, researchers note mentoring throughout history from the relationships between Socrates and Plato to Lorenzo de Medici and Michelangelo (Merriam, 1983). Similarly, according to Day (2013), coaching can be traced to the twelfth century when sports competitions across activities began. In the twenty-first century, both of these tools are used extensively across various disciplines to achieve similar goals, including the development of an individual. In the current study, mentoring is defined as a mutual relationship between an experienced individual guiding and cultivating a mentee, which is the teacher's (Merriam, 1983).

Similarly, coaching is defined as the act of providing non-evaluative and ongoing feedback on a targeted area based on observations (Stormont et al., 2015). Based on these definitions, we consider that mentoring and coaching vaguely differ in their responsibilities, where one focuses on guiding, and the other provides non-evaluative feedback. However, due to their mutual characteristics (e.g., guidance, feedback) and goals (development), we argue that mentoring and coaching can be fused and implemented simultaneously to support individuals. Accordingly, in the current study, the terms mentoring and coaching are used simultaneously and interchangeably to discuss the development of an individual.

Transformative Learning Theory Guides Mentoring and Coaching

The vehicle for development in mentoring and coaching lies in transforming an individual's frame of reference. Mezirow (1978) first introduced the transformative learning theory as a theory that explained how adults transform their learning by enhancing a frame of reference. According to Mezirow (1996), "learning is understood as the process of using a prior interpretation to construct a new or revised interpretation of the meaning of one's experience to guide future action" (p. 162). Moreover, in his discussion of the transformative learning theory, Mezirow explains how the transformative process is created and constrained to a frame of reference. An individual's frame of reference is composed of structures based on assumptions and expectations that frame the individual's points of view, influencing their thinking, beliefs, and actions (Taylor, 2017). Based on the literature, we understand that many teachers enter classrooms with preconceived notions that positively (Burant & Kirby, 2002; Fitts & Gross, 2012) or negatively (Rodríguez-Izquierdo et al., 2020; Villegas, 2018) impact their thinking, beliefs, and actions towards ELs. By enhancing a frame of reference to one that is: (a) inclusive, (b) differentiating, (c) permeable, (d) critically reflective, and (e) integrative (Mezirow, 1996),

teachers can deliver instruction that acknowledges ELs diverse needs. More specifically, through mentorship, a mentor focuses on enhancing a frame of reference by guiding teachers to critically reflect and collaborate on current instruction and focus on transforming their instruction to differentiated and inclusive ELs. In doing so, students receive instruction that is accessible, which supports their academic development.

Online Learning

In education, virtual platforms support teacher learning by providing training, mentoring, or coaching online. In this study, we follow Dorner's (2012) definition of online learning as a computer-mediated activity in which one can advise, encourage, promote, and model to provide learning that extends the limitations of time and space, creating an equitable opportunity for all to learn. The significant number of teachers in need of support related to ELs is large, and VMC makes it possible to reach the substantial numbers of those in need. Moreover, it is evident across various studies that online learning overcomes barriers such as location (Malanson et al., 2014; Ruble et al., 2013), time (Leighton et al., 2018; Vernon-Feagans et al., 2015), and accessibility (Leighton et al., 2018). The dilemma is whether synchronous communication can surpass the limitations of virtual distance and create egalitarian dynamics to maximize learning.

There are different types of VMC: synchronous and asynchronous communication. Mentoring and coaching that follow a synchronous format use online platforms to deliver learning in real-time (Bates et al., 2016). In contrast, mentoring and coaching that follows an asynchronous format uses online platforms to deliver learning in a delayed time approach (Bates et al., 2016). In the current study, a synchronous approach is followed to enable the mentor and mentee the opportunity to engage in real-time communication. According to Mezirow (1991), setting the conditions to what we assume as a relaxed environment, is conducive to participation

in critical discourse. Dorner and Kumar (2017) delve deeper into engaging in critical discourse by discussing the characteristics a mentor should possess to facilitate and have meaningful communication online. These characteristics consist of carefully planning mentoring encounters, moderating interactions, and collaborating to promote long-term habits of reflection (Dorner & Kumar, 2017). In all, when developing VMC, the mentor needs to establish conditions conducive to collaborative opportunities that promote critical reflection through carefully planned feedback and guidance.

Quality Instruction

The term quality instruction or high-quality instruction is frequently used among researchers, policymakers, and practitioners related to ELs and non-ELs (ESSA, 2015; Tong, 2017; Doabler et al., 2016). Whether referring to ELs or non-ELs, quality instruction is student-centered, with subtle differences between what encompasses quality instruction for ELs and non-ELs. According to Umansky et al. (2020), access to high-quality instruction for ELs includes various factors such as the program (e.g., ESL, BIL), accessibility to core content, and English language development (ELD). The current study addresses two factors that can be implemented with mentoring regardless of the program: accessibility to academic core content and ELD. Accessibility to academic core content and ELD are two core rights in bilingual and ESL education, “the right to equitable and accessible grade-level content and the right to English language instruction for English acquisition (Castañeda v. Pickard, 1981; Lau v. Nichols, 1974)” (Umansky & Porter, 2020, p. 14). Researchers have found that quality instruction is associated with higher academic gain for Spanish-speaking ELs (Tong, 2010; Slavin et al., 2011; Burchinal et al., 2012). Similarly, to Tong et al. (2017), we believe that teachers' quality of instruction is the key to ELs' academic language development and academic achievement. Therefore, teachers

should understand both of these elements that go hand in hand when delivering quality instruction.

Accessibility to academic core content refers to a teacher's ability to make academic content comprehensible. This means that for ELs, research-based pedagogical practices such as visual scaffolding (Nguyen & Watanabe, 2013; Wright et al., 2015), manipulatives (DiRanna et al., 2013), or graphic organizers (Mercuri, 2010; Struble, 2007) can facilitate learning. During this type of instruction, the teacher focuses on developing students' English language across all domains: listening, speaking, reading, and writing. This means that teachers of ELs are simultaneously providing accessible academic content and developing ELs' English language.

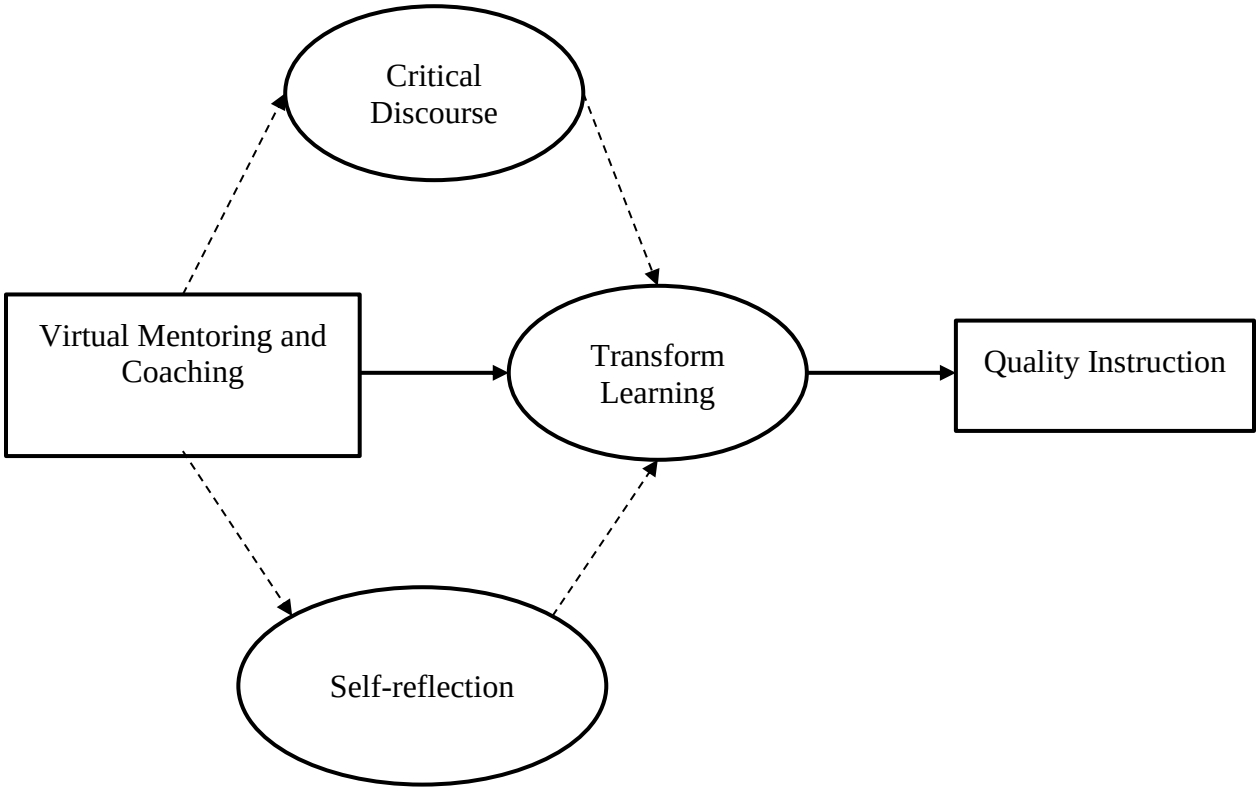
For years, schools designated specific times for students to receive ELD support (Rios-Aguilar et al., 2012; Umansky & Porter, 2020). However, in the last few years, there has been a change in education, where all teachers working with ELs are being prepared to integrate language and content instruction (Calderon et al., 2011; Umansky & Porter, 2020). Now, when a teacher delivers accessible academic content through multiple strategies, students have the chance to improve their English language and academic content with much ease as opposed to no support. In considering these needs, teachers can provide quality instruction that promotes ELs' core academic content and academic language proficiency in English (Tong et al., 2017).

The area of VMC for teachers of ELs continues to grow due to its potential to support teachers (Tang et al., 2020). As this area continues to grow, we need to consider all aspects that contribute to its efficiency. In the current study, the transformative learning theory helps us understand adult learning, which is necessary to support teachers in transforming and enhancing their knowledge regarding ELs. However, due to the complexity of delivering mentoring and coaching, we considered the impact of online learning on VMC. Fortunately, with synchronous

communication, mentors and mentees can still communicate and engage in critical discourse. Once these two components, theory, and vehicle to deliver VMC, are accounted for, one needs to consider the content that will drive VMC. In this case, we focus on quality instruction. Quality instruction includes various areas; for ELs, it refers to the teacher's ability to develop and implement effective practices that address students' academic, linguistic, and cultural needs. In line with Krashen (1985), who introduced us to comprehensible input, and Cummins (1979), who discussed ELD for ELs, access to instruction that will promote academic content and language development are vital for ELs' academic achievement. In all, the transformative learning theory and concepts make it possible for teachers to receive VMC to support their understanding of ELs.

Figure 2

Theoretical and Conceptual Framework



Literature Review

We conducted a comprehensive literature review focused on virtual mentoring or coaching and quality instruction for ELs. As mentioned previously, we will use VMC throughout the study to refer to online mentoring or coaching because we have found that both share similar protocols and goals or that researchers use elements of each to deliver interventions (Correnti et al., 2020; Matsumura et al., 2019b; Nugent et al., 2016). For example, in Matsamura's (2019) study, the researchers use the term coaching throughout the study. However, the coach's role in this study is to guide through open-ended questions and promote reflection, which means the coach uses coaching and mentoring elements. Similarly, Leighton et al.'s (2018) study described

the coaching intervention as a collaborative experience between the coach and coachee; this is a common feature of mentoring, where both mentor and mentee serve as the agents of progression. These studies show how researchers refer to mentoring or coaching but, in their intervention design, they combine elements of both to support teacher's professional growth. Therefore, we remain consistent throughout this article with the term VMC as mentoring and coaching can be intertwined.

We begin by introducing the development of VMC over time then present studies related to the benefits and elements of effective VMC. Due to the gap in VMC literature for EL teachers, we expanded our search to include studies encompassing teachers of non-ELs. We then present literature regarding the quality of instruction for ELs by discussing the role of pedagogical practices (e.g., ESL strategies) on ELs' academic language and content development. Lastly, we review the literature on measuring teacher's classroom instruction to determine the quality of instruction. This provides recommendations for the research of VMC for the teachers of ELs, which we present.

Virtual Mentoring and Coaching to Support Teachers

Virtual Mentoring and Coaching Benefits

There is a consensus among researchers of the impact PD has on instruction quality (McConnell et al., 2013; Powell & Bodur, 2019). This has led to an increasing demand to support teachers nationwide, resulting in VMC development. Significant contributions of mentoring and coaching, whether face-to-face or virtual, is guidance and feedback a mentor can provide a teacher within their classroom (Malanson et al., 2014; Pianta et al., 2008; Powell et al., 2010). Many researchers have noted VMC's promises in supporting teachers' professional

growth (e.g., classroom management, self-efficacy, teaching strategies) (Bang, 2013; Carmouche et al., 2018; Malanson et al., 2014; Matsumura et al., 2019; Pianta et al., 2008; Powell et al., 2010; Tang et al., 2020; Vernon-Feagans et al., 2015). For instance, in studies conducted by Nugent et al. (2016) and Carmouche et al. (2018), the researchers reported a significant increase in teachers' professional growth due to online mentoring. More specifically, in Nugent et al.'s (2016) study, the researchers provided mentoring sessions that consisted of joint planning, action/practice, reflection, and feedback for treatment teachers. Findings demonstrated that teachers in the treatment condition had statistically significantly higher results across all outcomes when compared to control teachers. Similarly, in Carmouche et al.'s (2018) study, the researchers provided coaching sessions with specific feedback and prompted self-evaluation that increased teachers' pedagogical practices from baseline to intervention. Although it has been established by many researchers that VMC improved teachers' pedagogical practices, there continues to be uncertainty on specific elements of effective VMC (Nugent et al., 2016), as we present later.

VMC Over the Years

In the beginning years of VMC, researchers examined and evaluated VMC's impact by analyzing the effects of web-based consultations (Pianta et al., 2008) or differential effects of face-to-face mentoring or coaching to VMC (Powell et al., 2010; Ruble et al., 2013). Although these studies contribute to the literature on the positive impact of VMC, conclusive findings were not established. The researchers merely acknowledged VMC interventions' potential when face-to-face mentoring and coaching were unfeasible (Pianta et al., 2008; Powell et al., 2010; Ruble et al., 2013). Nevertheless, these studies laid the foundation for other researchers to contribute to the area by continuously examining the impact of VMC on teacher's professional growth across

various areas (e.g., grade, teacher, subject). For example, Nugent et al. (2016) quantitatively measured and compared teachers' professional growth by analyzing theoretical knowledge, beliefs, self-efficacy, and classroom measures in science classrooms. The researchers found that treatment teachers had reported statistically significant higher results across all teacher outcomes. Similarly, guided by researchers such as Pianta et al. (2008) and Powell et al. (2010), in Matsumura et al.'s (2019) study, the researchers studied the effect of VMC on teachers' professional growth. They concluded that VMC was indeed a tool that could improve teaching quality. Recently researchers have recommended that future studies evaluate effective elements (e.g., mentor experience, relationships) of VMC to support teachers' professional growth (Alemdag & Erdem, 2017; Chong et al., 2020; Matsumura et al., 2019a; Nugent et al., 2016). We have witnessed a transition in questioning the art of VMC from comparing traditional mentoring or coaching to VMC to examining effective elements of VMC. The question is no longer whether VMC leads to more significant gains but what makes VMC effective.

What Makes VMC Effective

The literature on effective elements of VMC is limited, and there is high variability across characteristics of VMC (e.g., duration, intensity, mentor or coach experience) across the studies found in the comprehensive literature review, so finding patterns in characteristics of VMC and teacher effects is challenging. More rigorous studies meeting What Works Clearinghouse evidence standards on the linkage between VMC and teacher outcomes could have made it possible to discern effective elements of VMC (e.g., online relationship, duration, intensity, mentor experience). Nevertheless, we present literature found on effective elements of face-to-face mentoring or coaching and VMC as researchers (Matsumura et al., 2019b; Powell et al., 2010; Vernon-Feagans et al., 2015; Vernon-Feagans et al., 2013) have suggested that

modality used to deliver coaching or mentoring is less important than the elements of the quality mentoring or coaching. Additionally, these researchers have found that teachers made gains regardless of medium, which means that effective face-to-face mentoring or coaching elements can be effective in VMC (Powell et al., 2010; Gilbert, 2016).

As mentioned previously, due to the limited research on effective elements of VMC, various researchers have resorted to findings of effective elements on traditional mentoring and coaching to support the design of their VMC interventions. For example, in a study conducted by Matsumura et al. (2019), the researchers aligned their online coaching intervention to face-to-face coaching by ensuring the coach was an expert in the field. According to several studies (Biancarosa et al., 2010; Matsumura et al., 2013; Neuman & Cunningham, 2009; Sailors & Price, 2015), a commonality between the effectiveness of these studies showed that coaches significant training in coaching could have played a role in the quality of coaching. Similarly, in a study conducted by Vernon-Feagans et al. (2015), the researchers followed Powell and Diamond's (2013) hypothesis that a longer duration of coaching sessions did not lead to higher gains due to teacher's inability to absorb all the feedback. Based on Powell and Diamond's (2013) hypothesis, Vernon-Feagans et al. (2015) developed an intervention in which teachers in the online coaching sessions received focused feedback that lasted 20-30 minutes. In contrast, teachers in face-to-face coaching received sessions that lasted one to two hours. According to the researchers, online coaching was more efficient, whereas the face-to-face coaching sessions lasted longer due to the mentor and mentee reviewing content outside of the scope of the intervention (e.g., classroom management). Overall, effective practices, regardless of medium, are more important to the quality of mentoring and coaching (Matsumura et al., 2019b; Powell et al., 2010; Vernon-Feagans et al., 2015; Vernon-Feagans et al., 2013).

Although the literature on effective features of VMC is limited, researchers discuss elements necessary for VMC related to technology and logistics (Van Boxtel, 2017). According to several researchers, some of the most distinct effective features of online learning is the importance of quality video (e.g., non-blurry, audio) (Hager et al., 2012; Schmidt et al., 2015), camera placement (Hager et al., 2012; Israel et al., 2013; Schmidt et al., 2015), and strong network connectivity (Hager et al., 2012). Although technology has improved over time, one needs to consider these elements that may positively or negatively impact the effectiveness of VMC. Overall, they should be considered so that the quality of mentoring or coaching is not interrupted.

Contributing to the Literature of VMC for Teachers of ELs

As mentioned previously, although there is an understanding based on the literature of VMC to support teachers' professional growth, there continues to be an alarming gap in supporting teachers of ELs through VMC. In conducting this comprehensive literature review, only one study focused on supporting teachers working with ELs. In Tang et al.'s (2020) study, the researchers provided teachers in the experimental group with a VMC intervention focused on supporting ELs. Findings demonstrated improved pedagogical practices as measured by a classroom observation instrument and focus group. Tang et al. (2020) study contribute to the quantitative literature on the effectiveness of VMC for teachers of ELs and qualitative to understand their perceptions on improved instruction as a result of the VMC intervention. An additional study mentioned the EL student population, but the VMC intervention did not focus on improving teachers' professional growth related to ELs; it was improve the teacher's overall professional growth (Leighton et al., 2018; Tang et al., 2020). Therefore, future studies encompassing EL teachers should focus on establishing the effectiveness of VMC with this

specific population and examining effective elements of VMC (e.g., mentor experience, online learner characteristics, intervention design) that lead to increased professional growth.

Overall, it is understood among many in the community of PD that medium of delivery does not serve as the object of instruction but aids in addressing other challenges faced by traditional mentoring or coaching such as location, time, and resources (Leighton et al., 2018; Malanson et al., 2014; Vernon-Feagans et al., 2015). As with any PD, VMC looks into bringing mentoring and coaching for as many teachers as possible. More specifically, for mainstream teachers working with ELs, it provides the opportunity to receive VMC that otherwise, they would not receive due to finances (Carmouche et al., 2018; Vernon-Feagans et al., 2015), time (Leighton et al., 2018), or geographic location (Malanson et al., 2014; Ruble et al., 2013). However, according to research, specific elements need to be considered when developing VMC opportunities for teachers working with ELs.

Improving Education for English Learners

For decades, researchers have debated the best programs (e.g., dual-language, ESL, bilingual) or methods to support ELs, so they are successful in English classrooms (Barrow & Markman-Pithers, 2016; Cummins, 1981; Echevarria et al., 2008; Krashen, 1992; Lara-Alecio et al., 2009). The core of these debates has led administrators in school districts to make judicious decisions regarding programs or methods to implement when supporting ELs (Umansky & Porter, 2020). Whether it is to promote bilingualism or ensure that they master the English language quickly, the overarching goal should be to provide teachers with the necessary tools to improve instruction for ELs. This is seen in various studies, where researchers have focused on supporting teachers in improving quality instruction for ELs despite the program's focus (Barrow & Markman-Pithers, 2016; Chin, 2015; Tong et al., 2014). As mentioned earlier, the construct of

quality instruction for ELs can be composed of various dimensions such as teachers' understanding of the English language (Coady et al., 2016), first or second language processes (Krashen, 1985), influences of ELs native language on their ELD (Cummins, 2000; Li, 2013), cultural and language competence (Nieto & Bode, 2011 as cited in Coady et al., 2016), or effective pedagogical practices (i.e., ESL strategies) that provide ELs with comprehensible input (Krashen, 1992). Due to this construct's extensive scope and the current study's VMC content, we have narrowed our interest to two dimensions, academic language and pedagogical practices focused on enhancing teachers' quality of instruction. The two dimensions encompass a portion of the quality instruction construct that enables ELs access to academic language instruction facilitated through pedagogical practices. In the next sections, we delve into ELs' academic language and pedagogical practices (e.g., ESL strategies) to inform VMC content as we support teachers of ELs.

Academic Language Development

Cummin's (1981) work was among the first studies that discussed cognitively demanding academic language related to ELs. In his contribution to the literature, Cummins described two types of languages: cognitively undemanding, basic interpersonal communicative skills (BICS), and cognitively demanding language, cognitive academic language proficiency (CALP). In a given situation, BICS "requires processing information within a meaningful interpersonal context where meaning is supported by many situational and paralinguistic cues" (Cummins, 1981, p. 23). Meanwhile, CALP "reflects individual differences in processing language, which is "disembedded" from a meaningful interpersonal context, and … is an autonomous representation of meaning" (Cummins, 2000, p. 23). In an educational context, BICS is referred to as the

language used during informal social interactions (e.g., recess time); whereas, CALP is referred to as the academic language used in content instruction. According to Cummins (2000), ELs need to acquire CALP to succeed academically (Cummins, 2000). Ardasheva et al. (2015) further state that ELs' academic achievement gap is grounded on their standing on both BICS and CALP concepts. This subtly explains the importance of teachers developing ELs CALP and providing contextualized support to master both academic language and content. This, in turn, will allow students to interpret and make meaning from oral and written language presented in everyday classroom instruction (Dutro & Moran, 2003 as cited in Bowers et al., 2010; Uccelli, 2015). In the current study, light and dense language content within TBOP can be categorized as CALP. In light language content, the teachers use CALP by reviewing or engaging in skill practice. Whereas, in dense language content, the teacher and students use dense language in new content that is conceptually loaded with specialized language that promotes critical thinking. Although both are categorized as CALP, there is a subtle difference where one uses specialized and conceptually loaded vocabulary that drives learners to engage in critical thinking.

Therefore, teachers' understanding of ELs levels regarding academic language or English language proficiency is vital as teachers deliver instruction appropriate to students' linguistic and content needs. With an understanding of a student's level of BICS and CALP, a teacher can accommodate instruction to support linguistic and content needs. There is a consensus that a teacher will promote CALP or English language proficiency by resorting to methods that can facilitate understanding, which will ultimately help develop the language-specific knowledge necessary for academic achievement (Meskill & Oliveira, 2019; Tong et al., 2014; Tretter et al., 2019). An extensive number of studies have focused on supporting students' academic language development across various areas (Huerta et al., 2016; Irby et al., 2018; Li et al., 2017;

Moschkovich, 2015; Tong et al., 2014; Tong et al., 2008; Uccelli et al., 2015; Ulanoff et al., 2015). Several studies have demonstrated that developing ELs' academic language promotes their academic achievement (Garza et al., 2018; Tong et al., 2017). These studies have found significant differences in students' academic language development due to focused interventions on language and strategies. This means that students can develop academic language when language is made comprehensible through pedagogical practices that facilitate understanding. By introducing the concept of academic language and its role to students, teachers can develop accessible instruction. Therefore, PDs, in this case, VMC, can focus on supporting teachers' professional growth in these areas. Subsequently, we discuss teachers' pedagogical practices to facilitate ELs' development of academic English language skills.

Pedagogical Practices

Facilitating Understanding of Academic Language and Content

An essential element in supporting ELs' academic content and linguistic growth consists of providing teachers with effective pedagogical practices that facilitate learning for ELs as noted by various researchers such as academic language scaffolding (Banse et al., 2017; Echevarria et al., 2006; McNeil, 2012), advanced organizers (Mercuri, 2010; Puteri Rohani Megat Abdul et al., 2017; Struble, 2007), manipulatives and realia (DiRanna et al., 2013), or content connections (Hoff, 2017; Lee & Buxton, 2013; Tong et al., 2018). These pedagogical practices have yielded positive academic outcomes for ELs across various areas such as science (Tong et al., 2014) and reading and writing (Banse et al., 2017; Irby et al., 2018). In a study conducted by Irby et al. (2018), the researchers developed an intervention to support teachers' professional growth. In this study, the researchers measured teachers' use of questioning

strategies, strategies that solicit critical thinking across various levels. In their questioning description, the authors emphasize teachers' need to provide additional time for students to formulate a response. Providing additional time demonstrates an understanding of the students' needs on linguistic levels. For example, a student at the intermediate levels of English language proficiency for listening and speaking may require more time to formulate a response; thus, questioning with wait-time shows an understanding of linguistic levels.

Another method empirically tested to support academic language and content development, which can be considered academic language scaffolding, is visual scaffolding. Visual scaffolding refers to an approach where visuals are integrated into a lesson to support students' understanding of content and language. Examples of teachers visually scaffolding academic language and content include but are not limited to pictures or charts which add clarity to the teacher's verbal commands (Nguyen & Watanabe, 2013). Although it has been established that visuals provide ELs with academic language and content knowledge support (Wright et al., 2015), teachers need guidance and training on selecting appropriate visuals that will facilitate ELs' academic language development and content knowledge.

As mentioned earlier, ELs academic achievement can be attributed to their mastery of both BICS and CALP. As suggested by some researchers, Ardasheva et al. (2015) and Kim and Herman (2009), attainment of high levels of academic language proficiency allows ELs to minimize the academic achievement gap and perform at similar or higher levels than those of their native-English speakers on standardized assessments. In pursuance of developing high levels of academic language proficiency, a teacher needs to resort to various methods where students can reach social and academic language proficiency, which can be accomplished through several pedagogical practices. Implementing methods that scaffold dense quality

instruction to facilitate students' content and language is imperative for their development and understanding of content and language.

As mentioned earlier, research indicates that teachers of ELs are ill-prepared to address ELs' diverse needs. According to findings from several studies (Nugent et al., 2016; Pianta et al., 2008; Tang et al., 2020; Vernon-Feagans, 2015), mentoring or coaching online has significantly improved teachers' professional growth across various areas such as science, mathematics, social development. Through mentoring or coaching online, teachers have received contextualized and individualized support to address their specific learning and students' needs. Providing mentoring and coaching has become a viable method in supporting teachers' professional growth across different areas.

Methods

Research Design and Context

The current study was derived from a large randomized controlled trial (RCT) research project, Empowering Teachers of English Language Learners (ETELL). The purpose of the federally-funded research project was to support mainstream in-service teachers in Texas working with ELs and examine VMC's impact on their professional growth related to ELs. To be part of the project, participants had to be in-service teachers working in a school district across Texas with an established partnership with Texas A&M University. An established partnership with a district consisted of the districts and schools' consent to support in-service teachers seeking ESL certification and improving instruction for ELs. Once a partnership was established, participants registered for the course. After registrations closed, participants were randomized by an external evaluator, John Hopkins University, to treatment and control conditions.

Condition

The research project was designed with two conditions, treatment and control. Teachers received a six-week VPD and individualized support through VMC in the treatment condition, while teachers in the control condition only received the six-week VPD. Teachers in both conditions were enrolled in the same VPD course. To examine the differences in teacher's professional growth due to the VMC intervention, teachers in both conditions submitted pre- and post-observational videos. The observational videos for both conditions required teachers to submit a 15–20-minute recorded observation of classroom instruction (e.g., mini-lesson, teacher modeling) that showed teacher-to-student interaction (e.g., whole-class, small-group). Teachers in the treatment condition submitted an additional three videos for VMC sessions; the videos encompassed the same criteria, except teachers were encouraged to use the information presented in the mentoring sessions in their recorded observations. The VMC sessions were conducted based on teachers' schedules and while they simultaneously took the six-week VPD. Each VMC teacher met through a video conferencing platform, GoToMeeting, which can share camera and screen, making the collaboration synchronous, occurring in real-time. All recorded videos were uploaded by the participants to a secure portal, NextCloud, that only researchers in the IRB have access to.

Virtual Mentoring/Coaching

The VMC sessions lasted approximately one hour, and they focused on providing teachers in the treatment condition with three VMC sessions. The VMC's goal was to support teachers' application of theories and concepts related to ELs' daily classroom instruction. The mentors were graduate students and former elementary teachers seeking a Ph.D. in bilingual

education and curriculum and instruction with teaching experience in bilingual and ESL education.

The VMC followed an observe-assess-mentor sequence. During the observation phase, the mentor observed the recorded teacher's video and assessed teachers' instructional practices before each VMC session using a rubric aligned to three domains in the Texas Examinations of Educator Standards (TExES) ESL standards. The state of Texas sets the TExES ESL standards to assess a teacher's requisite knowledge and skills for an entry-level educator in Texas public schools. The three domains in the TExES ESL standards relate to teachers' understanding of (a) language concepts and language acquisition, (b) ESL instruction and assessment, (c) foundations of ESL Education, cultural awareness, and family and community involvement. Within each domain, there are several competencies. In the first domain, two competencies refer to teachers' understanding of language concepts and first and second language acquisition processes. Domain two encompasses five competencies, four of which relate to teacher's understanding of theories that inform instructional approaches implemented in domain two. One competency in domain two relates to appropriate assessments in ESL programs. All of the competencies in domain two align with state standards regarding content (Texas Essential Knowledge and Skills [TEKS]) and linguistic (English Language Proficiency Standards [ELPS]) development. Lastly, domain three encompasses three competencies related to background knowledge regarding ELs' education, cultural awareness, and family and community involvement. Due to the extensive information found within each of the domains and the need to provide contextualized support for teacher's everyday classroom instruction, the focus of the VMC sessions was placed on assessing teacher's application of domain two related to ESL instruction and assessment. The rubric was adaptable and applicable to any situation irrespective of grade level, subject area, or student population

because the competencies related to developing students' content and linguistic competence across listening, speaking, reading, and writing.

After the observe-assess phase, the mentor contacted the mentee via email to schedule a suitable time for the first VMC session. During the mentor phase, both mentor and mentee reviewed the rubric and its alignment to their current instructional practices related to ELs. During the mentoring process, the mentor shared the written feedback and suggestions on how the teacher could improve instruction to address ELs' content and linguistic needs based on the TExES ESL competencies. Additionally, reflection questions were posed throughout each of the competencies to allow teachers to provide input regarding their classroom's specific needs and understanding of the mentoring sessions' concepts. This cycle continued for three sessions, where teachers applied understanding from previous sessions to demonstrate an understanding of theories and concepts related to ESL education within their classrooms. Additionally, the mentor focused on mentoring the teacher according to their grade level and subject area due to teachers' varying characteristics.

Although the three sessions followed the same sequence, observe-asses-mentor, all three sessions differed as mentors had to scaffold support. In the first VMC session, in addition to mentorship regarding the alignment between the domains and teachers' instructional practices, teachers also received an overview of the domains. This provided teachers with the opportunity to receive scaffolded mentorship, where mentors provided explanations and suggestions regarding each of the competencies and their alignment to their instructional practices. This gave teachers a preview of the upcoming sessions. For the second session, the mentors posed more reflective questions for teachers to reflect on their instructional approaches and their alignment to the competencies. The reflective questions allowed teachers to critically reflect on their

instructional practices and collaborate with mentors on plausible instructional approaches to address ELs' linguistic and content needs. Following each session, the mentees were encouraged to implement instructional approaches discussed in each of the sessions. In the final session, more independence on the teacher's part was expected as they applied their understanding of the competencies to improve instruction for ELs. As the sessions progressed, mentors' roles transitioned to one that guided through critically reflective questioning to enhance teachers' understanding of quality instruction for ELs.

Virtual Professional Development

The project focused on supporting teachers' theoretical understanding of ELs through a six-week VPD. The asynchronous multi-module VPD course was developed to address domains aligned with ESL TExES standards mentioned earlier. Within these domains, teachers were introduced to topics revolving around first and second language acquisition theories, approaches, and methods for ESL education, instructional activities that promote ELD, assessment of ELs, and methodologies. The course consisted of six modules; each module was designed to allow participants to complete tasks over a week. The main content regarding the domains was delivered for four weeks, modules two to five. Two modules served as introductory and concluding modules to support individuals, week one and six.

The introductory module was designed to introduce and get participants acquainted with Blackboard's online learning management system. During this time, participants met their instructor and peers through online discussion forums and completed a pre-survey and pre-assessment. The concluding module provided information on registering for the exam and provided students with additional time to complete the VPD. Following module one, participants were introduced to the content in four modules regarding the concepts previously discussed. The

four modules presented the content in a logical order, a recorded audio-visual presentation regarding the content and readings to solidify understanding of content. During each module, the participants had the opportunity to demonstrate their understanding of the content through case studies and quizzes. The case studies allowed participants to collaborate with other participants in the course through discussion forums. The quizzes assessed students' understanding of the content within a module. Throughout the course, participants were supported by in-service bilingual teachers that served as course instructors.

Sample

We relied on data collected from the second and third year of the research project in the current analysis. The data from the first year were excluded because it was a pilot study that included a sample in which teachers' VMC was provided through a bug-in-the-ear concept in which mentors provided VMC as teachers were delivering the lesson. For years two and on, the approach to VMC changed from the mentor providing synchronous VMC from a teacher-recorded classroom. These two concepts of bug-in-the-ear and VMC synchronously through videoconferencing differ, so we excluded year one from this data analysis. More specifically, we restricted the data to teachers who completed the VPD and VMC and submitted pre- and post-observation videos. Our rationale for these criteria was that teachers who completed the professional development activities and observational videos would better demonstrate accurate teacher outcomes due to the intervention. This resulted in 211 participants, 99 randomly assigned to treatment, and 112 randomly assigned to control condition.

Table 3

Descriptive Statistics for Teacher Variables

Variable	*N*	%
Gender		
Male	32	15.2
Female	179	84.8
Race/Ethnicity		
White/non-Hispanic	120	57
Hispanic	42	20
Black/African American	32	15
Asian	9	4
Two or more races	8	4
Teaching Experience		
0-5 years	89	42
6-10 years	53	25
11-15 years	29	14
16 or more years	40	19

Measuring Quality of Instruction

To measure if the content provided through VMC supported teacher's quality instruction we utilized a validated classroom observation instrument entitled Transitional Bilingual Pedagogical Model (TBOP). TBOP is a validated classroom observation instrument first published by Lara-Alecio and Parker (1994) as a pedagogical model for transitional bilingual classrooms. This theoretical model based on Krashen (1981) and Cummins (1986) was developed to observe instruction in transitional bilingual classrooms. Since this model's development, operationalizing and field-testing have contributed to a new and reformed

theoretical model formally known as TBOP (Bruce, 1995; Bruce et al., 1997). This instrument has been implemented in a wide array of classrooms, from mainstream to bilingual, servicing ELs and non-ELs, contributing to its validity in observing classroom instruction (Garza, 2018; Irby et al., 2018; Lara-Alecio et al., 2009; Tong et al., 2017b).

The TBOP classroom observation instrument consists of eight domains: ESL strategy, curriculum area, physical group, activity structure, communication mode, language content, and language of instruction to document classroom instruction across various domains related to ELs education. There is a pre-existing list of codes within each domain from which observers can select a code for each domain. The first domain, strategy, documents teacher's implementation from a list of instructional practices (e.g., visual scaffolding) to support ELs. The fourth domain, activity structure, records teacher-to-student behaviors (e.g., observe-collaborate). The fifth domain, communication mode, is used in conjunction with activity structure and documents student's communication modes (e.g., aural, writing). The sixth domain, language content, documents the type of content used during instruction (e.g., light, dense).

As mentioned previously, in the current study, we were interested in measuring the impact of VMC on two domains within quality instruction, ESL strategies, and language content. We utilized the ESL strategy domain to address instructional methods implemented by the teacher. For language content, we used two subdomains, activity structure and communication mode, to show how the teacher and student used language content. These two domains, ESL strategy, and language content, embody elements of quality instruction related to ELs' academic development.

Data Collection

To address the research questions, we relied on classroom observational data from both conditions to ascertain whether teachers in the treatment condition used more ESL strategies and dense language content than the comparison group. Therefore, we asked teachers to record their classroom instruction in both conditions. The pre-and post-observational recordings were then coded by a group of graduate students using TBOP. The coding of classroom observations consisted of approximately 45 recorded observation entries, each entry equaling 20-seconds of classroom instruction. Before coding could begin, the graduate students, former ESL and bilingual teachers seeking a Ph.D. in Curriculum and Educational Psychology with an emphasis on Bilingual Education were trained using TBOP. The training consisted of understanding the theories underlying the domains within the TBOP model. During the training, the trainer provided the graduate students with opportunities to practice using the TBOP instrument. After reaching a common understanding during the practice TBOP sessions, the raters continued practicing coding classroom observations until a 90% consensus. Once the raters reached a consensus, the raters were assigned four pre-observation classroom observations to code independently to establish interrater reliability. IRR was established for each phase of coding, pre-observational videos, and post-observations videos. For both initial and final codings, raters meet IRR with an overall average Gwet's adjusted AC1 >.6.

Analysis

Research Question 1 and 2

Preliminary checks were conducted to ensure the two assumptions of chi-square independence test were not violated. Chi-square independence tests were used to analyze the

differences in ESL strategy by language content (light or dense) between the treatment and control condition. The chi-square independence tests were conducted by stratifying the categories of ESL strategies (implemented and did not implement an ESL strategy) within the light and dense language content. The chi-square was used to analyze the *p*-value and Cramer's V for effect sizes. The effect size was interpreted following Cohen's (1988) guidelines small (.1 - .3), medium (.3 - .5), large (>.5). Further post hoc analysis was conducted to understand where the differences existed by calculating adjusted standardized residuals. To account for the inflation of the Type I error rate, we applied a Bonferroni corrected *p*-value. The statistical significance for the Bonferroni adjusted *p*-value was set $p < .0027$ for light language content and $p < .0025$ for dense language content, which was calculated by dividing the unadjusted *p*-value (.05) by the number of comparisons (18 = light and 20 = dense). All data were analyzed using SPSS 25.

Research Question 3 and 4

Preliminary checks were conducted to ensure the two assumptions of chi-square independence test were not violated. Chi-square independence tests were used to analyze the differences in treatment and control teachers' pedagogical behaviors (activity structure and communication mode) by language content (light or dense). The chi-square independence tests were conducted by stratifying activity structure and communication mode (implemented and did not implement) within the light and dense language content. Chi-square was used to analyze the *p*-value and Cramer's V for effect sizes. The effect size was interpreted following Cohens (1988) guidelines small (.1 - .3), medium (.3 - .5), large (>.5). Further post hoc analysis was conducted to understand where the differences existed by calculating adjusted standardized residuals. To account for the Type I error rate inflation, we applied a Bonferroni corrected *p*-value. The

statistical significance for the Bonferroni adjusted *p*-value was set $p < .0027$ for light language content and $p < .0025$ for dense language content, which was calculated by dividing the unadjusted *p*-value (.05) by the number of comparisons (18 = light and 20 = dense). All data were analyzed using SPSS 25.

Findings

Research Question 1: What is the difference between treatment and control teacher's implementation of individual ESL strategies when using light language content (e.g., visuals, questioning, academic language scaffolding) as measured by TBOP?

A chi-square test of independence was conducted to analyze the association between the condition and ESL strategies, as shown in Table 4. The analysis revealed a significant association between the teachers' ESL strategies in the treatment and control condition implemented when using light language content χ^2 (8, N= 3615) = 116.078, $p < .001$, $V = 179$. Adjusted *p* values for multiple comparisons showed statistically significant differences between teacher's implementation of instructional practices by condition, as shown in Table 4. In implementing *questioning strategy*, the proportion of treatment teachers (59.8%) implementing questioning during light content language was significantly higher from teachers in the control condition (40.2%) (adjusted *p*-value = .0013), suggesting that teachers in the treatment condition used more questioning strategies during light language content. For *graphic organizers,* the proportion of treatment teachers (81.7%) who used more graphic organizers during light content language was significantly higher from teachers in the control condition (18.3%) (adjusted *p*-value = <.0001), suggesting that teachers in the treatment condition used more graphic organizers during light language content.

Table 4

Chi-Square Statistics and Effect Sizes of Teachers Implementation of ESL Strategies during Light Language Content by Condition

		Condition				
Strategy		Control	Treatment	Chi-square	Adjusted *p* value	Cramer's *V*
Questioning	n	53	79	10.401	$p < .001$	.054
	%	40.2%	59.8%			
Visuals	n	605	371	35.310	$p < .001$	.099
	%	62%	38%			
Graphic Organizer	n	17	76	48.704	$p < .001$	.116
	%	18.3%	81.7%			
Technology	n	89	43	10.104	.002	.053
	%	67.4%	32.6%			

Note: Strategies with statistical significance with a p-value less than the adjusted p-value of .0027 were included in this table.

Effect size statistics are presented through Cramer's V and can be interpreted using the following criteria of .10 = small effect size, .30 = medium effect size, and .50 = large effect size.

Research Question 2: What is the difference between treatment and control teacher's implementation of individual ESL strategies when using dense language content (e.g., visuals, questioning, academic language scaffolding) as measured by TBOP

A chi-square test of independence was conducted to analyze the association between the ESL strategy implementation during dense language content and condition, as shown in Table 5. The analysis revealed that there was a significant association between the ESL strategy implementation during dense language content by condition χ^2 (9, N= 4600) = 119.145, $p < .001$, V = 161. Adjusted *p* values for multiple comparisons showed statistically significant differences between teacher's implementation of instructional practices by condition, as shown in Table 5. In implementing *manipulatives*, the proportion of treatment teachers (60.6%) integrating

manipulatives during dense content language was significantly higher from teachers in the control condition (39.4%) (adjusted *p*-value < .0001), suggesting that teachers in the treatment condition integrated more manipulatives during dense language content. For *technology,* the proportion of treatment teachers (76.6%) who used more technology during dense content language was significantly higher than control teachers (23.2%) (adjusted *p*-value = <.0001), indicating that treatment teachers used more graphic organizers during light language content.

Table 5

Chi-Square Statistics and Effect Sizes of Teachers Implementation of ESL Strategies during Dense Language Content by Condition

		Condition				
Strategy		Control	Treatment	Chi-square	Adjusted *p* value	Cramer's *V*
Questioning	n	86	28	23.986	$p < .001$	.072
	%	75.4%	24.6%			
Academic Language Scaffolding	n	297	182	18.074	$p < .001$	.063
	%	62%	38%			
Manipulatives and Realia	n	89	137	17.242	$p < .001$	.061
	%	39.4%	60.6%			
Graphic Organizer	n	63	18	20.599	$p < .001$	.067
	%	77.8%	22.2%			
Technology	n	63	18	29.463	$p < .001$	.080
	%	77.38%	22.2%			

Note: Strategies with statistical significance with a p-value less than the adjusted p-value of .0025 were included in this table.

Effect size statistics are presented through Cramer's V and can be interpreted using the following criteria of .10 = small effect size, .30 = medium effect size, and .50 = large effect size.

Research Question 3: What is the difference between treatment and control teachers' pedagogical behaviors (activity structure and communication mode) when using light language content measured by TBOP?

Two chi-square tests of independence tests were conducted to analyze the association between the activity structure and communication mode teachers integrated during light language content by condition, as shown in Table 6. The analysis revealed a significant association between teachers in the treatment and control condition when using different activity structures and communication modes to deliver light language content. χ^2 (17, N= 3615) = 81.498, $p < .001$, $V = .150$ and χ^2 (16, N= 3615) = 218.537, $p < .001$, $V = .246$ respectively. Adjusted *p* values for multiple comparisons showed statistically significant differences between teacher's implementation of activity structure and communication mode by condition. As can be seen in Table 6, the proportion of teachers in the treatment (78.9%) condition differed significantly (adjusted *p*-value < .0001) in the interaction activity structure than teachers in control (21.1%) condition, suggesting that teachers in the treatment condition provided more opportunities for interactions than teachers in the control condition.

For communication mode, teachers in the treatment condition showed statistically significant differences across two student communication modes such as *writing-verbal* (*p*-value < .001) and *aural-verbal* (*p*-value <.001). Teachers in the control condition showed statistically significant differences across various communication modes such as *writing* (*p*-value < .001), *reading-aural* (*p*-value <.001), *verbal-writing* (*p*-value <.001), *verbal-reading* (*p*-value <.001). *graphic organizers,* the proportion of treatment teachers (81.7%) who used more graphic organizers during light content language was scientifically different from teachers in the control condition (18.3%) (adjusted *p*-value = <.0001). This shows that control teachers displayed

significant differences across more communication modes than teachers in the treatment condition.

Table 6

Chi-Square Statistics and Effect Sizes of Teachers Pedagogical Behaviors During Light Language Content by Condition

		Condition				
Subdomain of Language Content		Control	Treatment	Chi-Square	Adjusted *p* - value	Cramer's *V*
Activity Structure				81.498	$p < .001$	.150
Ask/per	n	97	35	21.186	$p < .001$	0.076
	%	73.5%	26.5%			
interaction	n	8	30	16.661	$p < .001$	0.067
	%	21.1%	78.9%			
Communication Mode				218.537	$p < .001$	.246
Writing	n	49	11	18.948	$p < .001$	0.072
	%	81.7%	18.3%			
Writing-verbal	n	3	27	23.447	$p < .001$	0.080
	%	10%	90%			
Aural-verbal	n	48	87	18.964	$p < .001$	0.072
	%	35.6%	64.4%			
Verbal-writing	n	68	28	11.398	$p < .001$	0.056
	%	70.8%	29.2%			
Verbal-reading	n	551	263	80.557	$p < .001$	0.149
	%	67.7%	32.3%			

Note: Activity structures and communication modes with statistical significance with a p-value less than the adjusted p-value of .0013 were included in this table.

Effect size statistics are presented through Cramer's V and can be interpreted using the following criteria of .10 = small effect size, .30 = medium effect size, and .50 = large effect size.

Research Question 4: What is the difference between treatment and control teachers' pedagogical behaviors (activity structure and communication mode) when using dense language content measured by TBOP?

Two chi-square tests of independence tests were conducted to analyze the association between the activity structure and communication mode teachers integrated during dense language content by condition, as shown in Table 7. The analysis revealed a significant association between teachers in the treatment and control condition when using different activity structures and communication modes to deliver light language content. χ^2 (18, N= 4600) = 110.651, $p < .000$, $V = .155$ and χ^2 (17, N= 4600) = 131.805, $p < .000$, $V = .169$ respectively. Adjusted p values for multiple comparisons showed statistically significant differences between teacher's implementation of activity structure and communication mode during dense language content by condition. As can be seen in Table 7, the proportion of teachers in the treatment (58.4%) condition differed significantly (adjusted p-value < .0001) in the lecture-listen activity structure than teachers in control (41.6%) condition. Similarly, the proportion of teachers in the treatment (75.5%) condition differed significantly (adjusted p-value < .0001) in the observed-collaborate activity structure than teachers in the control (24.5%) condition.

For communication mode, teachers in the treatment condition showed statistically significant differences across one student's communication modes, *aural* (p-value < .001) and *aural-verbal* (p-value <.001). Teachers in the control condition showed statistically significant differences across one communication mode, *aural* (p-value < .001). Whereas teachers in the control condition showed statistically significant differences across various student communication modes, *writing* (p-value < .001), *verbal* (p-value < .001), and *aural-writing* (p-

value < .001). This means teachers in the control condition showed higher statistically significant proportions of students communicating across various modes.

Table 7

Chi-Square Statistics and Effect Sizes of Teachers Pedagogical Behaviors During Dense Language Content by Condition

		Condition				
Subdomain of Language Content		Control	Treatment	Chi-Square	Adjusted *p* - value	Cramer's *V*
Activity Structure				110.651	$p < .001$	.155
Lecture/listen	n	319	447	46.10682	$p < .001$	0.100
	%	41.6%	58.4%			
Ask/perform	n	202	122	12.29344	$p < .001$	0.0517
	%	62.3%	37.7%			
Observe/perform	n	271	151	24.19656	$p < .001$	0.073
	%	64.2%	35.8%			
Observe/cooperate	n	12	37	15.95843	$p < .001$	0.060
	%	24.5%	75.5%			
Communication Mode				131.805	$p < .001$	.169
Writing	n	84	32	18.322	$p < .001$	0.063
	%	72.4%	27.6%			
Aural	n	462	544	24.611	$p < .001$	0.073
	%	45.9%	54.1%			
Verbal	n	53	10	25.113	$p < .001$	0.073
	%	84.1%	15.9%			
Aural-writing	n	296	160	29.671	$p < .001$	0.080
	%	64.9%	35.1%			

Note: Activity structures and communication modes with statistical significance with a p-value less than the adjusted p-value of .0013 were included in this table.

Effect size statistics are presented through Cramer's V and can be interpreted using the following criteria of .10 = small effect size, .30 = medium effect size, and .50 = large effect size.

Limitations

Although our study contributes to the increasing literature on the impact of VMC and VMC for teachers of ELs, it has several limitations. One of the limitations of this study is small to no effect sizes across the different ESL strategies and language content, including the pedagogical behaviors, used to encourage language development. The small to no effect sizes highlight the importance of more empirical research in VMC for teachers of ELs. The sample size poses a second limitation. Although the sample size may be viewed as sufficiently large (211), a larger sample size would allow for comparisons across various characteristics (teaching experience, teaching experience with ELs). This would help us analyze different research questions under various categories, such as whether teachers with 0-5 years benefit more from VMC than teachers with 11-15 or 16 or more years of experience. A third limitation of this study is that teachers in the treatment and control condition received the same VPD. A true control condition in which teachers in the control group did not receive support would allow us to see the true effects of VMC on teachers' professional growth.

Discussion

Researchers argue that teachers need additional support to traditional PD through mentoring or coaching to foster their professional growth (Matsumura et al., 2019; Carmouche et al., 2018). However, various factors such as geographic location (Bang et al., 2013; Vernon-Feagans et al., 2015) and time (Vernon-Feagans et al., 2015; Carmouche et al., 2018) affect the delivery of mentoring and coaching for the high number of teachers in need of continuous professional development through mentoring and coaching. As seen in various studies, VMC has emerged as a viable option for delivering mentoring or coaching virtually in recent years because it surpasses the challenges faced by traditional face-to-face mentoring and coaching (Leighton et

al., 2018; Matsumura et al., 2019; Tang et al., 2020). However, there is limited to no empirical research with VMC in bilingual and ESL education, despite the lack of preparation for teachers working with ELs (Sugimoto, 2020; Yoon, 2008; Villegas, 2018). Only one study found VMC for ELs teachers; however, the focus was placed on the impact of VPD (Tang et al., 2020). Therefore, in this study, we investigated the impact of VMC on in-service teachers of ELs' professional growth. More specifically, we were interested in examining how teachers' quality of instruction improved due to the VMC. We found strong associations between teachers' implementation of ESL strategies, language content, activity structure, and communication modes by the condition through classroom observations.

ESL Strategy During Light and Dense Language Content

Concerning the first and second research question, it was found that strong associations between teachers' implementation of ESL strategies during light and dense language content by condition existed. We found that teachers in the treatment condition used some effective ESL strategies widely discussed in the literature, such as questioning, graphic organizers, and manipulatives. Contrary to the expectations, we found that teachers in the control condition used more ESL strategies during light and dense language content to support ELs than teachers in the treatment condition. Teachers in the control condition showed significant differences in the proportion of time invested in visual scaffolding, technology to enhance learning, questioning, academic language scaffolding, and graphic organizers.

The more statistically significant differences across ESL strategies during light and dense language content in the control condition as opposed to treatment are likely due to the study's design and characteristics of the intervention. Unlike other research designs where the control

condition received no support, in the current study, the teachers in the control and treatment condition were enrolled in the same VPD that addressed the domains teachers in the treatment condition received in the VMC sessions. This means that teachers in the control condition received support and could have benefitted from being enrolled in the same course as teachers in the treatment condition. Additionally, elements of the VMC such as duration, intensity, or mentors experience could have played a role in teachers' professional growth. The literature on effective elements of VMC is undefined due to the high variability of characteristics across studies integrating VMC; therefore, we will discuss effective elements of traditional mentoring and coaching that should be considered when developing VMC. According to various researchers (Matsumura et al., 2019b; Powell et al., 2010; Vernon-Feagans et al., 2015; Vernon-Feagans et al., 2013), modality implemented to deliver mentoring or coaching is less important than the elements that make the mentoring or coaching process effective.

The reason for the findings in the current study is unclear but it may have something to do with the research design lacking a true control condition. In a study conducted by Solari et al. (2016), the researchers developed an intervention to support teachers working with Spanish-speaking ELs through mentoring and training. The findings indicated that teachers in the treatment and control condition did not differ in the teacher outcomes assessed. An explanation presented by the researchers was that the study's design did not follow a traditional control condition since teachers in the control condition received support through materials and a system that guided instructional grouping. As noted by Solari et al. (2016), findings from a previous study (Landry et al., 2006) indicated that the support teachers in the control condition received showed that teachers' quality improved as a result of the support; therefore, it is difficult to gauge the impact of VMC when teachers in the control condition received support related to the

intervention teachers in the treatment condition received. Similar to Solari et al.'s (2016) conclusion, the VPD the teachers received in the current study addressed all the concepts presented in the VMC sessions; therefore, it is probable that this may have impacted teacher's professional growth. Additionally, as mentioned in the literature review, various studies have indicated significant improvements in teachers' pedagogical practices due to only providing PD or VPD (Dash et al., 2012; Fishman et al., 2013). Given that the current study and Solari et al. (2016) study did not follow the traditional control condition, interpretations regarding the impact of the intervention should be made after considering the research design.

The power of solely VPD to improve teachers' pedagogical practices is further explained by Nugent et al. (2016). The researchers developed an experimental study in which teachers in the treatment condition received a PD followed by online coaching. In contrast, teachers in the control condition did not participate in the PD or online coaching. The researchers found statistically significant differences across teachers in the treatment condition, indicating that the PD and VMC supported their professional growth. However, findings indicated that the PD had a major contribution to their professional growth compared to the online coaching. It can therefore be assumed that the VPD played a vital role in teachers' professional growth. There are two contributions in this study that could explain the findings from the current study. First, the researchers in Nugent et al., (2016) study designed a true experimental study in which teachers in the treatment condition received the intervention, but teachers in the control condition did not. In the current study, teachers in both conditions received support, with the treatment group receiving additional support through VMC. This means that the VPD teachers in the control condition could have supported their professional growth, meaning that statistically significant differences across various ESL strategies and language content for the control condition are

likely to occur. This is further supported by the findings reported in Nugent et al. (2016) study, where the PD was found to have played a more significant role in supporting teacher's professional growth than online coaching. As mentioned previously, teachers in the control condition were introduced to the same concepts as teachers in the treatment condition, positively impacting their implementation of ESL strategies and methods to encourage dense language content. Overall, the results from the current study are in line with Nugent et al.'s (2016) findings. No statistically significant differences across conditions indicate that providing teachers in the control condition with VPD effectively supported their professional growth.

In the current study, further research on the impact of VPD alone first would better demonstrate the effectiveness of VPD and the contribution of VPD to teachers' overall professional growth and the additional impact VMC had on their professional growth. Just like in Nugent et al.'s (2016) study, the researchers were able to compare different effects of the PD and online coaching; however, in the current study, the teachers in the treatment condition took the VPD and VMC simultaneously, so we could not analyze separate and overall effects. An elapsed time between taking the VPD and VMC would allow us to measure separate baseline effects to VPD (treatment and control) then VPD to VMC (treatment only). Overall, the reason for less significant findings across ESL teacher outcomes for the treatment condition is still unclear. Still, it may have something to do with no "business-as-usual" control and the VPD.

The somewhat contradictory result of teachers in the treatment condition using fewer ESL strategies during light and dense language content than the teachers in the control condition could also result from the features of the VMC. In a study conducted by Powell et al. (2010), the researchers found that teachers receiving mentoring and coaching traditionally or virtually made gains in their professional growth, indicating that regardless of modality, teachers can improve

their professional growth by receiving mentoring or coaching. Therefore, the power of mentoring and coaching lies in its elements, indicating that effective elements cited in the literature for mentoring or coaching can be integrated with VMC. A commonly cited effective element of mentoring or coaching is the mentor or coach's expertise in training played a significant role in the quality of coaching (Biancarosa et al., 2010; Matsumura et al., 2013; Neuman & Cunningham, 2009; Sailors & Price, 2015). In the current study, the mentors were former ESL and bilingual teachers; however, they had minimal training in coaching. This means that the mentor's limited training could have played a role in the teachers' professional growth.

Another element widely cited in the literature is the duration of sessions (Desimone, 2009; Elek & Page, 2019; Main & Slater, 2021). However, it is unclear as to the number of sessions required to support teachers' professional growth. In a review conducted by Elek and Page (2019), the researchers found that some studies noted the content and its relationships with dose (Tschantz and Vail 2000, Neuman and Wright 2010, Ota and Austin 2013, Marsicano et al. 2015 as cited in Elek and Page, 2019). Therefore, it is important to consider the content and the individual when judging the duration. In the current study, three sessions lasting approximately one hour could have sufficed for experienced teachers frequently working with ELs, but not enough for novice or teachers who did not frequently work with ELs. Overall, this element, although noted as a factor that can play a role in the effectiveness of mentoring or coaching, more empirical research is necessary to understand the impact on teachers' professional growth.

Pedagogical Behaviors by Language Content

After analyzing ESL strategy implementation by language content, it was interesting to examine how teachers used language content to support ELs linguistic growth. The current study

found a significant association between the implemented activity structure and communication mode by condition during light and dense language instruction. When delving deeper into the activity structures implemented by teachers and communication mode used by students, we found that teachers in the treatment condition used activity structures that required students to listen mainly. In contrast, teachers in the control condition used a wide array of pedagogical behaviors to encourage students to use light and dense language across various communication modes, writing and verbal. It is somewhat surprising that no other significant differences were noted in the treatment condition because this suggests that the VPD had a greater effect on teachers' professional growth.

Another possible explanation for these results could be that the VMC was not targeted to a specific grade-level, subject-area, or student population (e.g., ELs, students with disabilities) as other online mentoring or coaching studies. For example, in a study conducted by Vernon-Feagans (2015), the researchers were interested in supporting teachers' understanding of reading strategies for struggling readers in kindergarten and first grade, so they developed an intervention focused on providing teachers with online coaching while they supported a struggling reader one-on-one. In this intervention, the online coaches helped a teacher understand instructional practices to support struggling readers one-on-one; therefore, the teacher can focus on only one student at a time. In the current study, working with one English learner would better demonstrate teachers' ability to support that individual ELs language proficiency across the domains necessary. Additionally, in the current study, teachers came from diverse backgrounds (subject-area, grade-level, student population), and because many did not hold ESL certifications, they did not have ELs in their classrooms. These factors could have affected the impact of the VMC as measured by the classroom observation instrument, TBOP.

As mentioned previously in the literature, developing students CALP has shown to be a strong predictor of ELs' academic achievement (cite Garza 2018 and Tong 2017). However, there is a gap in the literature on how teachers can support ELs' academic language development. Because academic language becomes increasingly complex (Heineke & Neugebauerit, 2018), it is vital teachers receive the support necessary to support their ELs' academic language proficiency. The findings from the current study demonstrate that teachers use some ESL strategies to support students' understanding of light and dense academic language. Additionally, we found that teachers' use of light and dense academic language was not used across all domains, listening, speaking, reading, and writing. These findings indicate that teachers require more focused VMC on different elements of quality instruction. Therefore, future studies should focus on honing specific aspects of second language acquisition at a time.

Practice Implications

These findings should have an impact on how researchers or practitioners design VMC opportunities for teachers. Although our interest was not the VPD, these findings suggest that the VPD supported teachers' professional growth. Additionally, due to minimal significant differences across the teacher outcomes, it is important to consider that focused VMC on a specific area may better support teachers professionally. However, as found in Vargas et al. (2021), a study that investigated a small sample (N= 8) of in-service teachers from the current study, qualitative findings suggest that teachers benefited from the VMC as it addressed more specific needs regarding their classrooms. Lastly, researchers and practitioners should consider the content and individual when delivering VMC as some individuals will feel more comfortable with face-to-face mentoring, whereas others may benefit from the flexibility of VMC. Overall, we recommend that researchers and practitioners interested in supporting teachers' professional

growth through VMC should consider mentoring teachers in one area at a time and gradually build.

Conclusion

This is one of the first studies to look at the impact of VMC for teachers of ELs strategy and language content implementation. Our results showed that teachers in the treatment condition did not benefit as much as we expected from the additional support provided through the VMC. The results of the study indicate that the VPD teachers in the control condition received were helpful in supporting their implementation of strategies and language content. The main limitation of this study that could have affected the outcome was that the VMC covered major areas widely discussed in the literature, meaning that more targeted VMC on one area first, ESL strategies or language content, would have supported teachers in applying the content in their classrooms. However, as mentioned previously, qualitative findings from Vargas et al. (2021) show that teachers benefitted from the VMC. Another limitation in this study that could have affected the outcome was that a "business-as-usual" condition did not exist. A natural progression to this work is to develop a VMC that targets one area first and to analyze the impact of VMC across treatment and a "business-as-usual" condition. It is also important to note that a larger sample size would allow one to analyze data from different categories (e.g., district location (urban, suburban), teaching experience).

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CHAPTER IV UNDERSTANDING IN-SERVICE TEACHERS' EXPERIENCES AND PERCEPTIONS ON PROFESSIONAL GROWTH AFTER RECEIVING VIRTUAL MENTORING AND COACHING RELATED TO ELS

Introduction

In the past two decades, there has been an increased interest in supporting teachers' professional growth through virtual platforms, virtual professional development (VPD: Tong et al. 2015), and virtual mentoring and coaching (VMC: Irby 2015). Extensive research has shown that VPD (Dash et al., 2012; Irby et al., 2018; Tang et al., 2020; Tong et al., 2015) and VMC (Bang, 2013; Carmouche et al., 2018; Nugent et al., 2016; Vernon-Feagans et al., 2015) have had a significant impact on teachers' professional growth. However, according to several researchers, VMC, unlike VPD, provides contextualized and individualized support to bridge the gap between theoretical understanding and pedagogical applicability (Carmouche et al., 2018; Malanson, 2014; Nugent, 2016; Pianta, 2008). Despite the increase of VMC, there is limited research on the impact VMC plays on teachers of ELs' professional growth and even a more significant gap of studies describing teachers of ELs' perceptions after receiving synchronous VMC. Synchronous VMC provides the time needed for teachers to engage in critical discourse and self-reflection, which ultimately enhances their understanding of ELs and pedagogy.

According to Villegas (2018), a contributing factor of ELs' academic gaps is teachers' lack of preparation or self-perception of unpreparedness to work with ELs. Based on nationally standardized assessment data, ELs continue to lag behind their native-English speaking peers across various areas such as mathematics and reading (National Assessment of Educational Progress [NAEP], 2020). Federal policies such as the Every Student Succeeds Act (ESSA) emphasize the need for continued PD to support teachers of ELs' quality of instruction (U.S.

Department of Education [USDE], 2020). To address the lack of preparation and self-perceived unpreparedness to work with ELs, researchers have provided teachers with VMC (Tang et al., 2020; Vargas et al., 2021) to support their professional growth (e.g., classroom management, pedagogical practices for ELs, socio-emotional support). Unlike traditional PD, VMC is a viable alternative to traditional mentoring and coaching delivered face-to-face when constraining factors such as geographic location, time, or funding, impede teachers from receiving the needed support to improve instruction. Throughout this paper, VPD will refer to any form of professional development delivered virtually, and VMC will refer to any form of mentoring or coaching delivered virtually.

My interest in understanding teachers' perceptions and experiences of VMC's impact on their professional growth developed when quantitative findings demonstrated no statistically significant differences across treatment teachers receiving synchronous VMC (Vargas et al., 2021). Additionally, the gap in research focused on understanding in-service mainstream teachers' perceptions and experiences with VMC related to ELs is limited. The purpose of this phenomenology study focused on the lived experiences of in-service mainstream teachers receiving VMC. A qualitative approach using semi-structured interviews and surveys was used to analyze VMC teachers' perceptions and experiences. To our knowledge, this will be among the first studies to undertake a rigorous qualitative approach to understand in-service teachers of ELs' perceptions and experiences of VMC's impact on their professional growth. What we report in this study is a small sample of teachers' perceptions and experiences of a VMC related to ELs they received through a federally-funded grant. The following research questions guided this study:

1. What are teachers' perceptions and experiences of VMC's impact on their professional growth related to ELs?
2. How did teachers perceive and experience the VMC design in supporting their professional growth related to ELs?

Theoretical/Conceptual Framework

The theories and concepts underlying this research focus on presenting how VMC can transform in-service teachers' knowledge of ELs. We begin by introducing the transformative learning (TL) theory to explain how in-service teachers can transform their understanding of ELs through VMC. Due to the complexity of the delivery method, we also present the different modalities of delivering mentoring and coaching virtually. However, we focus primarily on synchronous communication with a delayed-feedback as the vehicle used to support teachers.

Transforming Teachers' Learning

In supporting teachers working with ELs, we must recognize that mainstream in-service teachers come with preconceived notions that negatively (Rodríguez-Izquierdo et al., 2020; Villegas, 2018) or positively (Burant & Kirby, 2002; Fitts & Gross, 2012) impact their thinking, beliefs, and actions (Taylor, 2017) during their classroom instruction. In the current study, the goal of VMC was to engage in discourse that would guide the teacher in self-reflection to cultivate their understanding of ELs' needs (e.g., linguistics, academic). Therefore, we follow Mezirow's (1978) TL theory to guide our approach in supporting teachers working with ELs.

The TL theory explains how individuals make sense of their experiences, how social structures influence how they make meaning of those experiences, and how individuals make modifications when dysfunctional challenges their frame of reference (Mezirow, 1991 as cited in Christie et al., 2015). According to Mezirow (1978), adults have a set frame of reference

constructed from childhood and life experiences, culture, or education which helps individuals make sense of the world, ultimately impacting their thinking, beliefs, and actions. Mezirow (1991) argued that because our points of view or behaviors can become so ingrained, it would take a destructive act or what he refers to as a disorienting dilemma (e.g., tragic car accident) to challenge them. However, to avoid experiencing a disorienting dilemma that may change our perspective or behavior on a given matter, Mezirow's theory proposed engaging in discourse. In the case of in-service teachers preparing to work with ELs, the idea is to engage in discourse that will change their behaviors or perspectives to support their ELs' diverse needs instead of expecting a disorienting dilemma to change those behaviors or perspectives. According to Mezirow (2003), discourse refers to "dialogue involving the assessment of beliefs, feelings, and values" (p. 59). Engaging in discourse that promotes critical reflection rather than a forceful action, the internal (e.g., perspectives on promoting bilingualism) and external (e.g., bilingual students are not improving academically) conflicts can be resolved through communication. According to Mezirow (1995), critical reflection is a "process by which we attempt to justify our beliefs, either by rationally examining assumptions, often in response to intuitively becoming aware that something is wrong with the result of our thought, or challenging its validity through discourse with others of differing viewpoints and arriving at the best-informed judgment" (p. 46).

Through VMC, a mentor can non-coercively challenge the set frame of reference and support mentees' exploration and reassessment of their thinking, beliefs, and actions by engaging in critical discourse. According to Kucukaydin and Cranton (2013) and Taylor (2017), engaging in critical discourse that pertains to direct experience can enhance the frame of reference. This means that providing teachers with VMC that is individualized and contextualized instead of no

individualization or contextualization can enhance the frame of reference. The goal is to support teachers in enhancing a frame of reference that is more "inclusive, differentiating, critically reflective, open to other points of views, and more integrative experience" (Mezirow, 1996, p. 115).

Lastly, a critical aspect when supporting teachers' transformation of learning is understanding that a learner must be involved and willing to engage in self-reflection to transform their learning (Mezirow, 1991 as cited in Christie et al., 2015). According to Christie et al. (2015), the goal of transformative learning is to "help individuals challenge the current assumptions on which they act, and if they find them wanting, to change them" (p. 11). This means that when in-service teachers experience situations that do not conform to their frame of reference, they need to be open and be willing to engage in self-reflection to develop a more critical view of their instruction related to ELs. Otherwise, a transformation of learning will not occur. In the following sections, we present ways to support teachers in being open and willing to engage in self-reflection to develop a more critical view of their instruction related to ELs.

Mentoring and Coaching via Virtual Platforms

The concept of mentoring or coaching has been used widely across various fields to support pre-service and in-service training. In education, continuous improvement through mentoring and coaching in line with current research or changing demographics is no exception. Mentoring and coaching are two terms used interchangeably in the literature to explain the process of two individuals working to achieve a common goal. However, as Irby (2012) mentioned, there are differences and similarities between these two concepts; therefore, it is essential to define mentoring and coaching. According to Merriam’s (1983) definition of mentoring, mentoring is a mutual relationship between an experienced individual guiding and

cultivating a less experienced individual. Coaching is defined by Stornmont et al. (2015) as the act of providing non-evaluative and ongoing feedback on a specific area. In the current study, we combined the terms mentoring and coaching to explain how an experienced individual in bilingual and ESL education supports a less experienced individual, in this case, an in-service teacher, to achieve their goals through guidance and cultivation based on non-evaluative and ongoing feedback. More specifically, we use a combination of characteristics from mentoring and coaching to allow mentors and mentees to engage in discourse that will promote self-reflection and ultimately impact their professional growth.

Over the last two decades, the advancement of technology has revolutionized the delivery of mentoring and coaching. More and more, mentoring and coaching virtually are implemented to transcend challenges presented by face-to-face mentoring and coaching (Bang, 2013; Ruble et al., 2013; Vernon-Feagans, 2015). Although VMC and face-to-face mentoring and coaching share similar goals in terms of improvement, there are differences in virtual modalities (synchronous v. asynchronous) that need to be considered when developing VMC opportunities that will impact teachers' professional growth. Based on the literature (Bates et al., 2016), VMC could be delivered synchronously (real-time approach: Bug-in-Ear (BIE), videoconferencing) or asynchronously (delayed time approach: chat boxes, emails, discussion boards). Within synchronous communication, there are two different approaches, one with immediate and another with delayed feedback. Several studies follow synchronous learning where mentees receive feedback instantaneously, BIE (Rock et al., 2014; Rosenberg et al., 2020; Scheeler et al., 2018; Wake et al., 2017). In BIE, mentors provide teachers with "immediate, on-demand guidance and corrective feedback" through a wireless earpiece as they are teaching (Wake et al., 2017, p. 329). In this method, a camera device is placed in an area that can provide a panoramic

view of the classroom, which allows the mentor to observe the classroom instruction and provide instantaneous feedback. In the current study, a synchronous approach with delayed feedback is used to provide teachers with mentorship. In this research design and many others across other studies (Bang, 2013; Carmouche et al., 2018; Nugent et al., 2016; Ruble et al., 2013; Vernon-Feagans et al., 2015), teachers receive feedback through videoconferencing based on pre-recorded classroom observations or pre-observed classroom instruction. This means that mentors and mentees receive feedback through video conferencing after their classroom instruction. The feedback focuses on providing constructive feedback that leads teachers to engage discourse that will help them self-reflect, thus enhancing their frame of reference.

Based on the TL theory, by engaging in critical discourse related to teachers' instruction during mentoring and coaching, in-service teachers can enhance their frame of reference to consider ELs' diverse needs. In implementing VMC opportunities for teachers to grow professionally, we need to evaluate teachers' perceptions of the impact a specific type of VMC has on their professional growth. By considering how the synchronous modalities enable or prevent the mentor and mentee from engaging in critical discourse to enhance their frame of reference, we can ensure we develop VMC opportunities that maximize teachers' learning.

Literature Review

In this literature review, we present literature surrounding the concept of mentoring and coaching virtually. We were mainly interested in reviewing the literature on effective elements of synchronous VMC and their role in transforming teachers' learning based on their experiences and perceptions of their professional growth.

Effective Features of VMC

With the advancement of technology, various studies have developed VMC opportunities to support teachers' professional growth across multiple areas (e.g., pedagogical practices, emotional support) (Pianta et al., 2008; Powell et al., 2010, Bang, 2013; Ruble et al., 2013; Bang & Luft, 2014; Malanson et al., 2014; Vernon-Feagans et al., 2015; Nugent et al., 2016; Carmouche et al., 2018; Leighton et al., 2018; Matsumura et al., 2019; Tang et al., 2020). The majority of these studies have found significant differences in teachers' professional growth after receiving VMC (Pianta et al., 2008; Bang, 2013; Bang & Luft, 2014; Malanson et al., 2014; Vernon-Feagans et al., 2015; Nugent et al., 2016; Carmouche et al., 2018; Leighton et al., 2018; Matsumura et al., 2019; Tang et al., 2020). Unlike traditional PD, VMC has been regarded as an approach that provides contextualized feedback to meet teachers' individualized needs (Carmouche et al., 2018; Malanson, 2014; Nugent, 2016; Pianta, 2008). However, most of the studies implementing VMC have not examined specific elements of what makes VMC effective. Instead, they have developed VMC interventions following elements of effective face-to-face mentoring or coaching. As suggested by several researchers (Matsumura et al., 2019; Powell et al., 2010; Vernon-Feagans et al., 2015; Vernon-Feagans et al., 2013), more interest should be devoted to elements of effective mentoring and coaching than delivery method. Several researchers (Powell et al., 2010; Ruble et al., 2013) have found that teachers made gains despite the method of delivery, which means that effective features of face-to-face mentoring and coaching can be as effective in mentoring and coaching delivered virtually. Therefore, we will first focus on presenting effective features of mentoring and coaching then discuss their integration and impact on VMC interventions. Although mentoring and coaching are two terms used interchangeably in the literature with sometimes similar or different meanings, we will still

discuss effective features of mentoring and coaching jointly since they share common effective features.

Based on the literature, mentoring and coaching revolve around various effective features that help establish effective mentoring and coaching opportunities. These features can be categorized by various domains such as relationships (e.g., trust, respect) and structures (e.g., contextualized, intensity, goal-oriented). According to several researchers, a mentoring experience is beneficial to both parties if there is a relationship (Hudson, 2016; Iqbal, 2020; Martin et al., 2016). Based on the literature, an important mentoring or coaching relationship is built on mutual trust (Efron et al., 2012; Hobson & Malderez, 2013; Hudson, 2016; Kupila et al., 2017; Sowell, 2017; Toll, 2018), respect (Efron et al., 2012; Hudson, 2016; Martin et al., 2016), collegiality (Efron et al., 2012; Hudson, 2016; Kupila et al., 2017; Martin et al., 2016), collaboration (Darling-Hammond & Skyes, 1999; Halai, 2006; Hawley & Valli, 1999; Main & Slater, 2021) and communication skills (Gagen & Bowie, 2005; Hadi & Rudiyanto, 2017; Toll, 2018). Efron et al. (2012) suggested that the flow of ideas and discussion between a mentor and mentee is unrestricted when building a trusting relationship. Sowell (2017) further sustained that building a mutually trusting relationship results in receptive feedback, supporting teachers' overall improvement.

For a mentorship relationship to be effective, other factors noted in the literature, such as communication skills, need to be considered when developing mentorship experiences. As suggested by several researchers, effective mentorship depends on good communication skills where the mentor can effectively communicate to guide and support with constructive feedback that is non-judgemental (Efron et al., 2012; Gagen & Bowie, 2005; Hadi & Rudiyanto, 2017; Hobson and Malderez, 2013). Therefore, a mentor needs to communicate effectively with the

mentee to establish a relationship that demonstrates trust, respect, and collegiality, supporting both mentor and mentee to grow professionally.

The other domain widely mentioned in the literature revolves around structures. According to Hairon et al. (2020), "structured mentoring provides a systematic approach to learning where there are focused observations for mentors and mentees, specified content coverage and delivery mode, and explicit philosophy" (p. 106). Some of the elements discussed in Hairon et al. (2020) paper are further supported by Ambrosetti et al.'s (2014) work, where the researchers discuss the importance of a structured mentorship based on four phases (a) preparation for mentoring, (b) pre-mentoring, (c) mentoring, (d) post-mentoring. For each of the phases, there are detailed guides of what is expected during each stage; this provides both parties with a framework that will guide the mentoring opportunity, maximizing mentoring potential (Ambrosetti et al., 2014). By providing a structured mentoring and coaching opportunity, the mentees have a chance to maximize the learning that would otherwise not be achieved with a non-structured mentoring and coaching experience.

Other elements that fall within a structure of effective PD as presented in the literature include content focus and coherence (Desimone, 2009; Hairon et al., 2020; Main & Slater, 2021), duration (Desimone, 2009; Elek & Page, 2019; Main & Slater, 2021), and applicability (Hairon et al., 2020; Main & Slater, 2021). In Hairon et al. (2020), the researchers captured various themes such as applicability; although not captured as a sub-theme within the structure feature, applicability could be embedded within an effective mentoring structure. As Hairon et al. (2020) mentioned, the structure of a mentoring opportunity also lies within its philosophy. If well-developed, the philosophy presented in mentoring and coaching focuses on supporting individual growth, which means the structure should provide contextualized and individualized

feedback that will directly support the mentee in applying the content learned. Nevertheless, providing a structured mentoring experience is a variable needed to enhance the clarity and stability of the mentoring relationship (Hairon et al., 2020).

There is a wide range of features that need to be considered when developing mentoring and coaching. In the current study, in-service teachers receive VMC, which is delivered through virtual platforms. As suggested by several researchers, effective mentoring and coaching elements can be implemented regardless of delivery method (Matsumura et al., 2019; Powell et al., 2010; Vernon-Feagans et al., 2015; Vernon-Feagans et al., 2013). For example, in the study conducted by Matsumura et al. (2019), the researchers translated and adopted successful features such as focused content, applicability to the classroom, and trained coach of face-to-face programs to online coaching. The researchers found that effective features found in face-to-face coaching could be implemented in online coaching, which means that features within relationships and structures can be effective in VMC. Although research on effective elements of VMC is limited, researchers point towards the need to consider different elements such as cultures to support teachers' professional growth (Matsumura et al., 2019). Nevertheless, based on the literature, we have found that effective face-to-face mentoring and coaching features can be implemented in VMC to support teachers' professional growth.

Now that we understand some of the effective elements of mentoring and coaching, we will discuss some effective features discussed in the literature related to online platforms when delivering synchronous mentoring and coaching by using video observations. According to some researchers, effective features when using classroom observation videos to mentor include video quality (e.g., clear image and audio) (Hager et al., 2012; Schmidt et al., 2015), camera placement (Hager et al., 2012; Israel et al., 2013; Schmidt et al., 2015), and reliable network connectivity

(Hager et al., 2012). The effective features presented in this section relate to features that need to be considered when designing VMC; however, the core of effective mentorship should revolve around effective elements despite the modality. Any mentoring intervention, whether delivered face-to-face or virtually, will not support the mentee with a lack of relationship and structure.

Understanding the Construct of Mentor-Mentee Relationship with Delayed Synchronous VMC

As mentioned above, there are different approaches within synchronous VMC. These approaches differ mainly in their ability to provide deferred or immediate feedback. One type of synchronous VMC design provides mentees with delayed feedback through videoconferencing based on pre-submitted classroom video observations. The second design provides mentees with instant feedback through BIE and videoconferencing from in-the-moment teaching observations. Although delayed and instant feedback are both labeled as synchronous approaches because mentees receive feedback in real-time, two main distinctions set them apart. In the synchronous videoconferencing approach, mentees receive delayed feedback from a previously recorded classroom observation. For instance, in a study conducted by Ruble et al. (2013), the researchers developed an intervention where mentors and mentees communicated through videoconferencing while viewing and pausing the pre-recorded video of teacher-student instruction. On the contrary, in the BIE synchronous approach, mentees receive immediate feedback as they are teaching. For example, in a study conducted by Scheeler et al. (2018), the researchers developed an intervention where mentors provided paraprofessionals working with students in special education with instant feedback as they were teaching.

The main difference across the methods is the time frame in which feedback is received. Both synchronous methods delayed (Bang, 2013; Carmouche et al., 2018; Nugent et al., 2016; Ruble et al., 2013; Vernon-Feagans et al., 2015) and instant (Rosenberg et al., 2020; Scheeler et

al., 2018; Wake et al., 2017) have proven to be beneficial in supporting teacher's professional growth. However, teachers' perceptions of VMC when given delayed feedback are under-researched in critical discourse or relationships. Consequently, it is important to understand time-frames of feedback and their implications on mentor and mentee relationship practice or reflection, which is needed to engage in critical discourse to transform a teacher's learning. According to Main and Slater (2021), delayed feedback allows the coach and coachee "more opportunity to reflect on the teacher," resulting in higher quality feedback. Through delayed feedback, mentors and mentees can develop a relationship and exchange in-depth feedback necessary for critical discourse. Therefore, in the context of the current study, it is important to understand how delayed feedback is perceived by in-service teachers concerning effective elements of mentoring and coaching such as critical reflection or relationships needed to engage in critical discourse that will transform an individual's learning.

In the literature, researchers have established that effective mentoring and coaching are dependent on domains such as relationships (Hudson, 2016; Iqbal, 2020; Martin et al., 2016) and structures (Desimone, 2009; Elek & Page, 2019; Hairon et al., 2020). As we continue presenting the different synchronous methods, we will understand how a synchronous approach with delayed feedback impacts the relationship between a mentor and mentee. This is important because, based on the theoretical framework underlying the study, TL theory, a critical discourse that promotes self-reflection, can transform a teacher's perspective or behavior (Mezirow, 2003). However, to engage in critical discourse that fosters self-reflection, different factors need to be accounted for. For example, a mentor and mentee need to establish a relationship grounded on various characteristics such as trust (Efron et al., 2012; Hobson & Malderez, 2013; Hudson, 2016; Kupila et al., 2017; Sowell, 2017; Toll, 2018), respect (Efron et al., 2012; Hudson, 2016;

Martin et al., 2016), collegiality (Efron et al., 2012; Hudson, 2016; Kupila et al., 2017; Martin et al., 2016), collaboration (Darling-Hammond & Skyes, 1999; Halai, 2006; Hawley & Valli, 1999; Main & Slater, 2021) and communication skills (Gagen & Bowie, 2005; Hadi & Rudiyanto, 2017; Toll, 2018) and structured VMC (Desimone, 2009; Elek & Page, 2019; Hairon et al., 2020). Therefore, understanding the impact of synchronous communication with delayed feedback on features grounded on relationships as perceived by teachers is essential when developing interventions that maximize and transform teachers' learning.

A considerable amount of literature has been published on interventions following synchronous VMC where feedback is delayed (Carmouche et al., 2018; Nugent 2016; Pianta et al., 2008; Richardson, 2017; Ruble et al., 2013; Tang et al. 2020; Vernon-Feagans et al., 2013; Vernon-Feagans et al., 2015) and synchronous VMC with instant feedback (Ottley & Hanline, 2014; Rock et al., 2014; Rosenberg et al., 2020; Wade et al., 2017). The majority of these studies have established that interventions in their respective modalities have supported teachers' professional growth. However, further research on the impact of effective features (e.g., relationship, structures) within synchronous communication with delayed feedback perceived by in-service teachers is necessary. The majority of the research investigating teaching perceptions of synchronous communication is related to pre-service teachers. This has implications, as one cannot generalize findings from solely a subgroup of the population, such as pre-service teachers' perceptions. For example, in a study conducted by Meschede et al. (2017), the researchers examined the differences between pre-service and in-service teachers' professional vision, pedagogical content knowledge, and beliefs. Findings demonstrated that pre-service and in-service teachers differed in their pedagogical content knowledge. Meschede et al. (2017) concluded that further investigation regarding different elements across teacher populations (e.g.,

novice, experienced) is necessary to “gain more generalizable results and to ensure that results are not due to specific sample characteristics” (p. 168). Because pre-service and in-service teachers differ in pedagogical content knowledge, careful consideration of in-service teachers' ingrained perspectives and teaching behaviors is important. A lack of in-depth feedback for in-service teachers could inhibit a transformation in their learning. As Mezirow (2003) suggested, engaging in critical discourse can enhance individuals' perspectives and behaviors.

Although all synchronous communication methods allow individuals to communicate in real-time, researchers disagree on which type of feedback, instant or delayed, is most effective. Wake et al. (2017) claim that "fear of disruption to the instructional process is one concern identified by teachers and coaches considering adopting virtual BIE coaching." (p. 333). This statement is further supported by Carmouche et al. (2018), in which researchers mentioned that both teachers and coaches complained about the double-tasking and the overwhelmingness in trying to teach. However, several researchers have concluded that teachers do not perceive this type of feedback as disruptive or distracting (Rock et al., 2009; Scheeler et al., 2010). Researchers have mentioned that feedback at the moment is more effective than delayed feedback (Rock et al., 2013; Scheeler et al., 2010; Scheeler et al., 2012; Wake et al., 2017). The goal of providing delayed synchronous VMC is to engage in critical discourse that will promote self-reflection, ultimately supporting a teacher, in this case, in-service mainstream teachers, in transforming their learning. Given all that has been mentioned, one has to consider how different elements of VMC as implemented in the current study promote critical discourse to enhance teachers' learning. Subsequently, we discuss delayed synchronous communication and how it provides mentees time to collaborate, which is needed to engage in critical discourse to transform an individual's learning.

As mentioned previously, relationships and structures have proven to be strong attributes of effective mentoring experiences. Through these effective mentoring features, a mentor can promote critical discourse necessary for transformed learning. However, relationships and structures do not grow freely. To build a relationship based on trust, collegiality, and respect, a mentor requires communication skills to aid the flow of a discussion between a mentor and mentee (Efron et al., 2012; Sowell, 2017). According to Dorner and Kumar (2017), communication has surfaced as a critical indicator of effective online mentoring processes, which means that successful mentoring requires online mentors to facilitate, sustain, and have meaningful online communications. Through delayed feedback, a mentor can provide detailed feedback and have the time to engage in collaborative discourse.

On the contrary, in studies following instant feedback, little to nothing is mentioned of collaborative discourse, as mentors provide instant feedback while minimizing class interruptions (Scheeler et al., 2010; Wake et al., 2017). This means that individuals do not have an opportunity to engage in critical discourse necessary for transforming their learning, which is necessary for in-service teachers who have ingrained perspectives and behaviors. However, a combination of immediate and delayed feedback could solve time so that mentors can engage in critical discourse and self-reflection necessary for transformed learning. Regarding detailed feedback, in a study conducted by Thurlings et al. (2014), the researchers were interested in exploring perceived feedback. The researchers concluded that detailed feedback is perceived as more effective than non-detailed feedback. According to Mezirow (1995), critical reflection is a "process by which we attempt to justify our beliefs, either by rationally examining assumptions, often in response to intuitively becoming aware that something is wrong with the result of our thought, or challenging its validity through discourse with others of differing viewpoints and

arriving at the best-informed judgment" (p. 46). This means that through non-coercive feedback, a mentor can challenge an individual's frame of reference and support the mentees in exploring and reassessing their thinking, beliefs, and actions. More specifically, in a delayed synchronous approach, mentors can engage in discourse that provides detailed feedback. By providing detailed feedback, a mentee has the opportunity to engage in critical discourse and self-reflection necessary for transformed learning.

Another element noted in the literature as necessary for effective mentoring is structure. According to Hairon et al. (2020), structured mentoring can help optimize a teacher's learning by providing pre-defined goals that focus on the mentoring experience. Because a mentoring experience is based on the discourse exchanged, the structure of the "feedback should be task and/or goal-directed, focused on the learning process, specific, in time and frequent" ... (Thurlings et al., 2013, p.12 as cited in Thurlings et al. 2014). With ill-structured mentoring, a mentor and mentee can miss out on opportunities to engage in critical discourse and self-reflection due to a lack of clarity which negatively impacts a teacher's transformative learning (Hairon et al., 2020). By providing a structured mentoring experience, a mentor can provide a mentee the opportunity to engage in critical discourse and self-reflection necessary for transformed learning.

The literature on in-service teachers' perceptions of VMC related to ELs with delayed feedback is non-existent. Due to the implications that synchronous learning can transform in-service teachers learning, more research is necessary. Nevertheless, whether delayed or instant, the aim of mentoring is to support in-service teachers in enhancing their frame of reference to be inclusive, differentiating, critically reflective, open to other points of view, and more integrative experience. For in-service teachers with ingrained perspectives and behaviors, critical discourse

and self-reflection may be the elements necessary to transform their learning. Therefore, this study will be focusing on the specific area of synchronous with delayed feedback in VMC as it promotes critical discourse necessary for self-reflection and transformed learning.

Methods

A qualitative approach in line with a phenomenological approach was utilized for the methodological framework of this study. As pointed by Hesse-Biber (2017), a phenomenological study is concerned with describing the lived experiences of individuals who experienced a concept or phenomenon. In this case, a phenomenological approach was utilized to understand teachers working with ELs experiences with VMC as noted by commonalities presented in the data.

Participants

The participants in this study consisted of eight in-service teachers teaching in Texas who participated in a VMC project from the Fall of 2018 to Spring of 2019. A purposive sampling (Forrester & Sullivan, 2019) method was employed to select participants who had experienced the VMC. From a list of all the participants who had participated in Fall 2018 to Spring 2019 (N= 91), an email was sent to each participant. A total of 13 participants responded through email or signed consent for the interview. However, only eight participants were interviewed due to the saturation of data. As Etikan et al. (2016) noted, purposive sampling places emphasis on saturation; therefore, once no new substantive information was acquired, no further participants were interviewed, resulting in a total of 8 participants who were interviewed. Of the 8 participants, the majority were female (N= 7). At the time the participants participated in the VMC, their teaching experience ranged from novice to experienced, with (N=*4*) indicating 0-5

years of teaching experience, (*N*=1) indicating 6-10 years of teaching experience, and (*N*=3) indicating over 11 years of experience. Table 8 provides a summary of teachers' characteristics.

Table 8

Summary of Teachers Characteristics

Pseudonym (Gender)	Race/ethnicity	Teaching Experience	District Location	Perceived frequency of working with ELs	Perceived level of experience working with people from cultural backgrounds different from their own
Ms. Angela (F)	Black/African-American	6-10 years	Urban	All the time	High
Ms. Katie (F)	White	0-5 years	Rural	All the time	Moderate
Ms. Erica (F)	Black/African-American	6-10 years	Rural	Sometimes	Moderate
Ms. Linda (F)	White	0-5 years	Suburban	All the time	Moderate
Ms. Jasmine (F)	Black/African-American	11-15 years	Rural	Frequently	Moderate
Ms. Laura (F)	Latino/Hispanic	16-20 years	Rural	Sometimes	Very Little
Mr. John (M)	White	21 or more years	Suburban	Frequently	Moderate
Ms. Miranda (F)	White	0-5 years	Rural	All the time	Very High

Data Collection

The researcher collected data from two sources, transcribed semi-structured interviews and survey responses from teachers' VMC experience. Teachers' experiences were the central unit of analysis in this research; therefore, semi-structured interviews provided the primary data for describing teachers' common experiences with VMC. Survey data consisting of open-ended questions were analyzed for the second level of triangulation with the semi-structured interviews. The interviews and survey responses served as a clarification tool and helped fill in the gaps that were not evident in the previous study that solely utilized classroom observations (Vargas et al., 2021).

Teacher Semi-structured Interviews

The data gathered from a semi-structured interview provided the researcher with a deeper insight into activities and events that could not be observed directly. The author interviewed each of the eight mentee participants through video conferencing following a semi-structured interview protocol with follow-up questions to prompt or clarify when needed. Each interview lasted approximately 20-50 minutes and was digitally recorded. The videoconferencing platform, GoToMeeting, provided transcriptions of each interview that were later revised by listening to the recording. Additionally, field notes taken during the interview were used in the reflexive journal for the researcher's reflection and positionality. The interview protocol observed (a) teachers' experience of the VMC before, during, and after, (b) experiences with previous mentoring and coaching, (c) understanding of practices for ELs, (d) rewards and challenges of VMC, (e) self-perceived changes in instructional practices as a result of the VMC.

Teacher Survey Responses

The data gathered from the mentoring survey provided the researcher with an idea of the participants' experience in the VMC sessions. After participants completed the VMC sessions, they received a mentoring survey consisting of three open-ended questions revolving around three areas: (a) perceived the best part of VMC, (b) learned experiences, and (c) suggestions for improvements.

Data Analysis

In analyzing the data, thematic analysis was conducted. Following Braun and Clarke (2006), as cited in Forrester and Sullivan (2019), steps in analyzing data allowed the researcher to closely examine the data for recurring themes (i.e., topics, ideas) within the pure qualitative and detailed data. First, the author familiarized herself with the data, revising transcriptions from the video conferencing platform, and a second and third time by reading and rereading the transcripts. During this time, the author noted ideas or concepts recurring for potential use in the final collection of themes. Then the data by each participant was divided into smaller segments organized into categories based on the semi-structured interview questions. The author and a second coder then separately began generating initial codes based on the phenomenon at interest, VMC experiences. To capture additional recurring codes, the researcher reviewed the transcripts a second time after both coders generated all initial codes. During this time, the author read the segments for additional recurring codes and found relationships, and developed themes that surfaced across all teachers. These themes were then reviewed a second time to refine by combining themes into one or creating overarching themes of interest prioritized to reflect the experiences important of more than one participant. Lastly, themes were refined and defined.

The survey responses were then analyzed to corroborate the results from the transcribed interviews.

Trustworthiness

Lincoln and Guba (1985) noted that an important element in qualitative research is its trustworthiness. In the current study, triangulation, peer-coding, and member checks helped establish credibility, which contributed to the trustworthiness of this study. As mentioned previously, triangulation was used to verify results using more than one source of evidence. This allowed the research to cross-reference the primary data source, interviews, and survey responses to confirm the defined themes, thus establishing trustworthiness in the data.

Another component used to establish trustworthiness consisted of peer coding. During the first analysis of initial codes, the author and a doctoral student separately assigned initial codes to the transcriptions. Before coding, the author met with the doctoral student to explain the coding process and the phenomenon under investigation. After initial coding on the first transcript, both coders met to debrief on initial coding. This continued until all transcripts were coded. This increased the study's rigor by lessening the chance of subjectivity or bias during the analysis phase.

The third component used to establish trustworthiness occurred when the researcher presented the participants with the interview transcripts and thematic summary documents for member checking. All participants were asked to read the documents and comment on whether they would like to make any changes to the transcript or findings to help complete the analysis to develop interpretations. The preliminary findings consisted of synthesized themes that surfaced from the qualitative data based on all participants' experiences with VMC.

Positionality and Reflexivity

According to Hesse-Biber (2017), one must reflect on their research standpoint before beginning a project as a researcher. This allows one to establish their researcher positionality as all researchers begin a project with "a certain set of values and ideas about social reality and how it can be known," which can impact the research design and process (Hesse-Biber, 2017, p. 59). The researcher was a first-generation college graduate who served four years as an elementary bilingual teacher in a 100% low socioeconomic district. The interest in ELs' complexities of teaching and learning was piqued by personal and professional experience as an EL and teacher of ELs. Additionally, given that the researcher was never a formal mentor/coach during their teaching career, they needed to attend to the possibility of misinterpreting information from interviews.

Due to the researcher's positionality and understanding that knowledge is constructed by both interviewer and interviewee (Hesse-Biber, 2017), the researcher engaged in reflexivity adapted from Hesse-Biber and Piatelli (2007, p. 510). By engaging in a reflexivity activity before beginning the research process, the researcher reflected on the process they would embark on. After, the researcher attempted to journal after each interview with journal entries varying from one paragraph to two paragraphs. This journaling allowed the researcher to see growth over time of their understanding of VMC related to in-service teachers' experience with VMC for ELs. Overall, reflecting on how an interviewer may affect the interaction between interviewee and interviewer is important to examine as this may further impact data gathering (Pezalla et al., 2012).

Findings

The research findings and interpretations of teachers' experiences with VMC to support their understanding of ELs are divided into four sections based on themes addressing the research questions. In general, the mentees expressed that the relationship and structure of the VMC had a positive impact on their understanding of ELs. Four broad themes based on teachers' experience with the VMC surfaced in the qualitative data analysis: (1) critical reflection, (2) relationship between mentor and mentee, (3) structure, and (4) feasibility. These themes highlight information related to effective features of delayed synchronous communication regarding the positive outcome of VMC as perceived by mainstream in-service teachers working with ELs.

Critical Reflection

One broad theme, critical reflection, emerged from the data. In this study, critical reflection refers to the process in which teachers engaged in critically thinking about their current practices to support ELs. This critical reflection theme explained how teachers perceived the VMC promoted their critical reflection during the VMC to enhance their professional growth. In addressing this question, we present teachers' experience with VMC before, during, and after. We then describe teachers' perceived experiences and interpret how their experiences impact their professional growth through critical reflection.

Before delving into teachers' experiences with VMC, the first question focused on understanding teachers' thoughts on being part of a VMC. Of the eight teachers, only one teacher indicated they were comfortable going into the VMC. Ms. Miranda said, "you, just, you can't stop learning, and so, it's just invaluable to keep getting other people's perspective.” The other

seven teachers had mixed emotions, and some indicated that they were apprehensive or nervous about going into the VMC. For example, Mr. John said:

> "to know that somebody was gonna be asking me to do things that might of sorta put me on the cusp of discomfort. You know to put myself on a video to try things that I had sort of read about, you know, you have to get to this place of vulnerability, I think in a mentoring situation."

Another teacher stated:

> "We're our worst critic, so, it's, I think it's intimidating to allow someone into your space, and allow them to critique you… So it gets very personal. So it's like, you have to, you have to attack it with a special, just a special way..." (Ms. Angela)

For most teachers, the unknown, low self-efficacy, or previous mentoring experience made them feel nervous and apprehensive. The idea of their teaching being scrutinized made them feel uncomfortable. These negative emotions have severe implications because if teachers are not comfortable, learning may not occur. This goes to Krashen's theory on affective filters for learners learning a second language. If the affective filter is high, learning can be obstructed. Although VMC does not attempt to evoke this emotion in individuals, it is inevitable, especially if individuals perceive themselves as less productive.

However, after the first session, teachers' experiences evolved to comfort and receptiveness to constructive feedback. Teachers expressed a sense of relief knowing that they were not being criticized or judged. Ms. Linda, for example, shared her receptiveness to the feedback and desire to improve her instructional practices.

> Ms. Linda said, “I wanted to do better. I wanted to, you know, use some of the ideas and everything because that's natural. You'll want to, you know, make somebody see that you're taking that information and putting it to good use ...”

Another teacher mentioned that it was linked to research and not just mere interpretations of the mentor. He said:

> … in watching my videos and offering that feedback and it was always attached to an observation. It was never her interpretation, it was, “I see this.” And taking me to what research had said about that or what best practices said about that. (Mr. John)

When teachers' comfort level increased because they realized that mentors “were not looking at it to get [them]…” teachers felt more comfortable, which led to more receptiveness because the feedback was delivered positively and in a collegial manner. As one interviewee put it:

> … when you have a mentor, what you're looking for is assistance. You know, I want to be able to, um, of course, make sure that I'm doing the correct thing and if I did something horrifically wrong. Of course, I would want you to say, wait a minute. You know, just, in the same sense, you know, having somebody that was more working alongside you and seeing what you did with the kids and saying things that you could add on to that or maybe take away, instead of somebody saying, well, next time you need to do this, it just it the way that is given and taken is a little bit better. (Ms. Linda)

Other teachers shared their receptiveness to the feedback because it was delivered positively and neutrally. These elements in the feedback helped teachers feel comfortable

and part of the learning process, which made them receptive to applying the feedback in their classroom practices.

By being in a safe environment that was non-threatening, teachers were comfortable enough to engage in critical discourse that promoted critical reflection. As two teachers mentioned, the non-threatening environment and sense of trust enabled them to ask questions that they may not have asked elsewhere because they may be seen as ill-prepared. The ability to break from the stigma that teachers should know everything allowed them to engage in critical discourse. Overall, this demonstrated increased confidence and awareness of ELs related to content, linguistic, and psychological awareness. The comments below illustrate how mentees reflected on their discussion with the mentor to address students' needs, but most importantly, how they were open to acknowledging ideas or concepts they had never considered before.

> I think that I'm more intentional. I think that when I think about what I'm going to teach, when I think about how I'm going to teach it, I make sure that I have pictures, and we talk about it... (Ms. Miranda)

The mentee continued and stated, “It's hard to see a perspective that you don't have, or, you've never had, and I've never had that perspective.”

Another teacher shared her experience in realizing the importance of visuals, she said:

> I didn't realize how important visuals were for ESL learners. And I was really surprised at first, But then I, once I, we discussed it and we went over the entire lesson, then, it was, it was really clear. How important it was to include those in teaching. Was. Really eye opening. You'd never really think about how important it is to, yeah? To show the students or teach them with the visuals. But even

> myself, when I'm learning, I realize that it's, it's important now. How important Is it? (Ms. Erica)

Another mentee mentioned that engaging in critical discourse helped her in seeing a perspective that was foreign. She shared:

> The best part was getting to meet my mentor and learning about ways to better improve myself as an ESL teacher. I never really realized some of the things that I was leaving out, like vocabulary first, show pictures to go with the vocabulary, sentence stems, and repeating my phrases. (Ms. Jasmine)

Similarly, with John, he described that he was unaware of EL's academic needs, and his mentor supported him by helping him see things from a different perspective to support his ELs needs. John said: "if I didn't care about them, it's because I didn't know enough to care about them, but she helped me to do that and build awareness to things researchers were saying…" Jasmine also noted that she reflected more in her lesson delivery by thinking about the students' needs and not making assumptions. She shared:

> "My thinking, oh, well, know, everybody should know this or everybody should see or you know, know what this looks like. I had to start showing them pictures of what things looked like."

All of these shared their experience in engaging in self-reflection about previous understanding they had. Through critical discourse, teachers could self-reflect on their teaching behaviors and perspectives regarding ELs' understanding. In these shared experiences, the teachers were able to enhance their frame of reference to one that considered ELs' diverse needs. Most importantly, teachers were in a safe environment

that allowed them to be vulnerable and engage in dialogue to reevaluate their beliefs and behaviors.

While teachers reflected on their pedagogical behavior changes, a second recurring sub-theme revolved around promoting bilingualism. As mentioned in the literature, teachers come with preconceived notions about ELs that positively or negatively influence their thinking, beliefs, and actions. Critical discourse helped teachers look past these preconceived notions and promote or show respect for students' native language. A few teachers shared their experience in promoting students' first language to support ELs' content development or provide a comfortable environment. For example, one teacher shared how the promotion of students native language helped students understand the content and led to building a strong relationship with her students she said:

> Well, in like one session I did not know what the cognate were and so you sent those to me. So, and I think because you sent me those cognates, I started to slow down even more. And I would say, what does the Spanish word for fire? And so, they would tell me what the Spanish word was for fire. And I'd be like, oh, that's like this English word. It means the same thing. And so, um, before, I would have probably never thought to do that. Um, and I think doing that meant a lot to my students because it was like, not only is she trying to understand my language, she is trying to help me relate the two. And so I think it helped not only with, like, I guess, Language acquisition, but it also helped build that relationship with those students. (Ms. Katie)

Another teacher stated:

> … I also told him that if there's a situation where he needs to speak to somebody, and it's a, you know, I don't want him to feel uncomfortable and push that he can only speak English. Because I said, you know, encouraging bilingual is a great thing... I don't want to make him feel bad because he speaks Spanish, either. I mean, that's not his fault that that's what his family speaks. You want to tell him, you know, in ten years this is going to pay off because being bilingual is a wonderful thing… (Ms. Linda)

It was through critical discourse that teachers were able to find meaning in promoting students' native language. This demonstrated an enhanced frame of reference that was inclusive, differentiating, critically reflective, open to other points of view, and more integrative experience (Mezirow, 1978).

However, changing a perspective is not enough. Through mentoring, a mentor can support a participant in translating that new knowledge to the classroom. Another sub-theme that emerged in the qualitative data focused on teachers' application of the content reviewed during the VMC sessions. Of the eight teachers, two teachers acknowledged that they had content knowledge regarding ELs, but they could not transfer knowledge into their classroom. Although other teachers did not explicitly state their inability to transfer knowledge into their classrooms, they did express a lack of confidence in supporting ELs. The comment below illustrates how one teacher explained her inability to apply the content she had previously learned to her classroom, where she worked with ELs. One of the participants commented:

> "I don't think I really understood how to, um, help my students. Like I had, I had the content. And I passed the content exam. But then, how that translated to instruction wasn't there. Without the, without the mentoring. Um, I knew that I needed to use. Real life stuff, realia and I, and I knew the kids needed to talk to

one another. But I still, I still didn't know what that looked like, I guess, before the mentorship." (Ms. Katie)

Mentees pointed out that the constructive feedback, sense of collaboration, and guidance provided a safe environment free of judgment, ultimately enabling them to become critical of their teaching practices. Most importantly, allowing them to apply what they learned in their classrooms.

Overall, a safe environment provided by the mentor allowed teachers to transition from a place of discomfort to comfort, to the point of allowing critical discourse and self-reflection to the surface, which allowed all mentees to expand their understanding of ELs' needs. Overall, all teachers shared their experience of how VMC supported their critical reflection.

Relationship Between Mentor and Mentee

By building a relationship based on different elements such as trust, respect, collaboration, mentors could provide teachers with a comfortable environment necessary for critical discourse and self-reflection. During the first mentoring session and on, mentees eased the nervousness and apprehensiveness they were experiencing about the VMC. As teachers realized that the VMC was not to scrutinize their teaching but to enhance it if needed, they began to feel comfortable. This was made possible by establishing a positive relationship. For example, Ms. Angela commented on her own experience on how teaching is very personal to her and how one could be apprehensive to the feedback given; however, the feedback provided was delivered not to feel like she was being criticized. She said:

At first, I was nervous about mentoring sessions in general, uh, I didn't know how it was gonna go. Like, how is this person going to like critique me? But after, like

> actually having a mentoring session, I felt like it was very positive, uh, it made me feel good about what I was doing.

Two other participants mentioned their ability to ask questions knowing they would not be judged. One mentee stated:

> "Because of that like type of dynamic between us, I could also be like really raw with you. Like if I didn't understand something, I could ask you without being Made Without feeling like I was I'm not intelligent enough in the area." (Ms. Katie)

Another mentee commented on the abundance of help and feeling that they could freely ask questions. Ms. Jasmine said, "If there was something we didn't, I didn't understand I didn't feel like, I better not ask, I better not ask that question…" All eight participants discussed their comfort in a "nonintimidating" environment, where they received "constructive feedback" along with "validation" that supported their critical discourse and self-reflection necessary for them to see other perspectives and apply pedagogical practices to support their students' needs.

Multiple candidates alluded to other benefits of a positive relationship related to unique features of an effective mentoring and coaching relationship such as collaboration, guidance, trust, relaxed environment, and shared goals. Although not all teachers discussed collaboration, three mentees commented on the feeling of working alongside the mentor to support their learning process. Ms. Linda stated:

> I just, I felt that it was something that we were honestly doing together. Instead of you just watching something and telling me stuff, I feel it was something that we were working on together. And obviously, when you're working on something

> with somebody, instead of somebody just telling you stuff, you feel better about it, and then you want, I wanted you to see that I was incorporating these ideas that you came up with.

Ms. Linda's comment on collaboration was echoed by another mentee, Mr. John, who said, "...we are here, and this is what we have to do. I like that sort of working together collegially to improve things for my kids." Mr. John repeatedly mentioned the spirit of collegiality throughout the mentoring program. The majority of the mentees alluded to the notion that the collaboration was a mentoring tool that enabled them to become active participants in their learning progression of ELs' diverse needs. For example, the comment below illustrates how Mr. John's mentor enabled him to coach himself, he shared:

> As a mentee just getting the right question from the mentor to get you to talk, you will just coach yourself to where you need to be… To help me, without her just saying this this this. It's like she got me to say what I needed to articulate to do... pose just the right question to get a mentee sorta of in the right frame of mind to try something new, to articulate a frustration, to ask the right question, whatever needs to happen it all stems from how the coach says it.

Being part of the learning process and understanding the end goal supported mentees in collaborating with mentors and not feeling that communication was transmissive or one way. The mentor and mentee were working together to improve their perspectives and behaviors related to ELs.

In all, the safe environment created by the mentor allowed mentees to feel comfortable by asking questions and self-reflecting. This type of relationship built on

trust, respect, collegiality, and collaboration allowed teachers to engage in critical discourse and self-reflect on perspectives or behaviors they had not considered before, which ultimately supported their understanding of ELs.

Although all teachers expressed their comfort and ability to reflect through guidance, Ms. Jasmine mentioned that the virtual environment did not provide an intimate level. The mentee said, "As far as virtual, it is just a wall, you don't even get to see the whole body. So it's just like it is not is not as personal." Nevertheless, all mentees, including Ms. Jasmine, alluded that the positive relationship between their mentors allowed them to become more aware and reflective of their practices. Teachers could critically reflect on ELs' diverse needs through this relationship, from linguistic to psychological needs.

Structure

The third theme, structure, encompassed characteristics of the VMC that supported teachers' professional growth. The structural benefits of the VMC cited by mentees included individualization and applicability, video-based reflection, organization, detailedness and focus, goal-orientedness. Although not explicitly stated by the mentees, the mentoring philosophy behind the VMC demonstrated to be the most pronounced characteristic of the VMC that allowed teachers to engage in critical discourse. The overarching idea that through VMC, teachers would receive individualized feedback that they could apply to their classrooms to help them grow as individuals resonated across all of the mentees. One participant commented on the positive of VMC by comparing it to traditional training. According to some mentees, perceived experiences of differences between VMC and traditional training lacked

applicability from the content presented. One mentee explained her experience with traditional training and her inability to transfer the learning to her classroom. On the contrary, her experience with VMC was individualized, which helped her apply the content to her class. The mentee said:

> ...I think, in the sense of it, it was relevant and actually helped me with what actually happened in my class. Yes, traditional training I think is great, and it helps me learn, but then in the application, I kind of miss the mark sometimes, because then I'm stuck, and nobody is there to help me… (Ms. Laura)

Similarly, another mentee explained that the VMC provided feedback she could apply in her classroom with her students. She responded as follows:

> That's because it's more personalized… It wasn't a group setting. Because, so many times when you're in group settings, they're talking about what the majority of the people did in… The way that I teach is completely different from History or from English... When you're able to sit down with somebody who's who's, watched 15 or 20 minute video of you teaching and their suggestions specifically for the content that you teach. It's it makes such a difference… It's something that I've even asked for here... tell me what I need to do to be better here. Not better, in English, Better in Science, like what can I do to make it better in here. (Ms. Miranda)

The mentee explained that the mentoring was tailored to her teaching and content area related to ELs. Being able to receive individualized feedback that transferred to the teacher's classroom was perceived as an effective feature of the structure of the VMC.

The goal of the VMC was to provide guidance that would promote critical discourse and self-reflection regarding individual teachers' perspectives and practices. In doing so, a teacher's frame of reference would be enhanced. However, each VMC session had to be different and tailored towards the teacher's needs for this to occur.

Another element cited multiple times in the data included teachers' experience with video-based reflection. The structure of the VMC consisted of providing teachers with VMC based on their pre-recorded classroom observations. The pre-recorded classroom observations were then referenced when the mentoring was sharing their screen of the written feedback. According to some mentees, this structure allowed them to see exactly what the mentor provided feedback on. Three mentees described their experience of receiving feedback attached to their recorded classroom observations. One mentee compared the VMC she received to face-to-face mentoring with delayed and no video and instant feedback (BIE). According to the mentee, she preferred watching the video together with the mentee and receiving feedback. She explained that having someone there while she teaches and then meeting afterward for mentoring would be complicated because she would have to recall what she taught. Although the same would follow for delayed synchronous VMC, the structure of the VMC the teachers received allowed them to see their recording and make the connections with the feedback provided by the mentor. Linda explained:

> The reason I liked it, I probably liked that more than having someone right there with me in person, because we looked at the same things together. So if somebody's in there with me, and then afterwards, they say, well, when you were doing such and such if you would have tried or would have tried this, then I have

to think back. But if we're looking at a video together, and you can say, At this moment, You know, Look at yourself, and what you did here, or what you know. How would you have done this or something? I can see what you're seeing, if you're doing it real-time, I don't see what you're saying, because I'm doing it.

Although only three teachers discussed the positives of video-based reflection, the concept recurred more than three times across the data. For example, Linda discussed the concept of video-based reflection later in the interview. She mentioned that the video helped "refer back" while mentoring in "real life" she would be unable to recall what she taught. Similarly, another mentee explained that the video-based reflection provided feedback attached to classroom observations and that feedback was not based on her interpretation but best practices based on research. He responded as follows:

> ...there was such a kindness about her in watching my videos and offering that feedback, and it was always attached to an observation. It was never her interpretation, it was, "I see this." And taking me to what research had said about that or what best practices said about that. (Mr. John)

These three mentees felt that this structure of recording and feedback back depth using the video allowed them to reflect. The delayed feedback allowed the mentor to provide detailed feedback and then use it and attach it to classroom observations. A lack of video or sharing screen capability would have limited both the mentor and mentee in maximizing the delayed feedback.

The mentees cited other structural elements of the VMC, such as organization, focus, and goal-orientedness, that made the VMC experience beneficial. For example, Ms. Angela said, "They were efficient and effective. They're straight to the point. Like

you said like I said, you shared the document…" This same participant also noted the focus by comparing this VMC with other PDs, she said:

> I feel like, like taking a deeper, a deeper look into the domains. I feel like we're so bombarded with all the staff development, professional development, like we're skimming through things. And, of course, like, allowed me to, like, look deeper into each of the domains, and like, really see, like, oh, hey, I can also do this This would really help my students.

Another mentee commented that the VMC was guided, and it was clear and concise with one goal in mind. She said:

> So I liked how your program was very guided. There were no surprises. We knew what was happening. It was clear, straight, cut forward. We knew what the goal was… You knew ahead of time what you had to do to prepare for them. We met, and, like I said, it was about what you said we were going to meet about. (Ms. Laura)

Because of the structure of the VMC, the mentors were able to maximize teachers' learning in the allotted time. The main focus revolved around contextualized feedback that would support each teacher. A lack of structure would have interfered with the flow and goal of the VMC, thus negatively impacting teachers' professional growth and perceptions of the VMC.

Feasibility

The fourth theme revolved around the functionality of using virtual platforms to provide teachers with mentoring and coaching. The most cited benefit of providing mentoring and coaching through virtual platforms was the flexibility the VMC provided.

According to the mentees, the VMC provided flexibility with scheduling and personal and professional time. For example, one participant commented on being able to meet after school hours; Mr. John said, "being able to log in with her, you know, it was always after school, so I appreciated that." Another mentee commented on the flexibility of space and time, she said:

> It kind of relaxed the whole environment or situation and took away some of the pressure, because sometimes if it has to be done at a certain place or certain time, then, you know, and I really can't get to it in the next, when you. It causes things to be rushed and not really sufficient, but by you guys being flexible, and we were able to flexible, so it really helped. (Ms. Erica)

The flexibility of the VMC and its ability to transcend challenges presented by space and time were some of the perceived benefits of the VMC's functionality.

There were many benefits of the functionality of VMC; however, one of the downsides of the structure of the VMC revolved around technology. One of the recurring challenges was due to the logistics of camera placement. One mentee commented on being restricted to the area that would capture her, which did not allow her to engage with other students during her instruction. Ms. Miranda stated, "when we were recording You really couldn't be amongst the kids like you couldn't be in with the kid. Yes, or, in a lecture position. And that made it a little bit more difficult." Another challenge revolved around uploading the video to the platform. Other than these technological barriers, the candidates did not find these challenges damaging the VMC experience. As one mentee noted:

> Um, I don't think that there were any negatives, it wasn't hard, I remember, you know, the detailed procedure of how to upload, I mean, it wasn't hard, it was very tedious. You know, you had to follow the directions, but then, when it didn't work, you know, I know, because I skipped that step, There were no, uh, major difficulties that you would say, you know, it was a turn off or, or, I was not, you know, wanting to know it was, it was awesome. And, I'm very grateful for having the opportunity to go through that. (Ms. Laura)

While these challenges appeared, they did not hinder the VMC experience as perceived by teachers in-depth feedback regarding their experiences on other elements such as relationship and structure in supporting their professional growth.

Overall, the challenges experienced did not limit the possibilities of the VMC experience for these teachers. As previously mentioned by our participant, bringing awareness based on the research allowed him to care about things he had no interest in before the VMC. Far too often, individuals' experiences are not accounted for when developing interventions to support their needs. In this teacher's explanation, we get an idea of VMC's impact on enhancing their frame of reference. Through the VMC, the teacher expressed the new awareness that was not there before, which helped him care about ideas or concepts he had not considered. These results provide important insights into teachers' experience with VMC regarding its relationship between mentor and mentee and structure.

Discussion

This study examined teachers' perceptions of their experiences of the VMC to support their professional growth related to ELs. The following section presents the overall findings and

how they relate to VMC literature with delayed feedback and teachers' perceptions. The following research questions guided this study:

1. What are teachers' perceptions and experiences of VMC's impact on their professional growth related to ELs?
2. How did teachers perceive and experience the VMC design in supporting their professional growth?

Research Question 1: What are teachers' perceptions and experiences of VMC's impact on their professional growth related to ELs?

Using Relationships to Promote Critical Discourse and Self-Reflection

In this study, we investigated in-service teachers' perceptions of VMC related to ELs. The purpose of VMC was to support teachers' professional growth through individualized and contextualized mentoring. The findings demonstrated that teachers perceived the VMC provided them with a positive mentor-mentee relationship, enabling them to engage in critical discourse to self-reflect on their perspectives and practices. This, in turn, supported their transformative learning towards an enhanced frame of reference. However, one must consider other elements dependent on a relationship, such as trust, respect, communication, and collaboration. For example, as Toll (2018) states, developing a solid relationship with good communication skills can support the mentor in promoting critical discourse and critical reflection necessary to transform learning. This means that relationships based on particular elements such as trust or respect alone will not ensure that the relationship contributes to teachers engaging in critical discourse and self-reflection.

Although many elements support the effectiveness of VMC, one element that the teachers widely noted was the positive mentor-mentee relationship. Teachers' perceptions and experiences of the VMC consisted of positiveness towards the relationship that promoted critical discourse. According to several researchers (Hudson, 2016; Iqbal, 2020; Toll, 2018), a relationship needs to be established so that the mentors and mentees can move forward. In the current study, teachers expressed a sense of trust and respect, which created a relaxed environment that led them to ask questions and be open about their teaching practices. Additionally, the richness in constructive feedback and communication with the absence of scrutiny and judgment on their pedagogical practices helped them feel part of their learning process. This, in turn, led teachers to feel comfortable and be receptive to the feedback; thus, allowing them to engage in critical discourse and self-reflection of their perspectives and pedagogical practices towards ELs. Ultimately, helping to increase their confidence and awareness to implement pedagogical practices to support ELs' diverse needs. This study confirmed the assertion that effective mentoring entails establishing a positive relationship to facilitate teacher learning (Hudson, 2016; Iqbal, 2020; Martin et al., 2016) towards ELs' diverse needs.

Various elements strengthen the mentor-mentee relationship, in this case, collaboration was a contributing element in supporting in-service teachers' professional growth. Early researchers established the importance of collaborative learning opportunities for teachers as an important element of effective PD (Darling-Hammond & Skyes, 1999; Hawley & Valli, 1999). In the current study, working alongside the mentors instead of only receiving feedback allowed teachers to immerse themselves in their learning process. For example, one mentee shared her experience with being guided and feeling a sense of collaboration instead of being told what she

needed to do. These findings align with the aim of mentoring, which is to guide and cultivate a less experienced individual (Merriam, 1983) by collaborating on the individual's needs. These findings align with findings that have established the importance of building a collaborative community between the mentor and mentee (Halai, 2006; Sowell, 2017).

Developing a relationship based on trust, respect, and collaboration requires time. Main and Slater (2021) noted that meeting at a designated time, in this case, providing delayed feedback, allows the coach and coachee to reflect on their pedagogical practices, resulting in higher quality feedback. In this sense, the delayed feedback provided mentors and mentees the time to establish this relationship, promoting critical discourse and self-reflection that would otherwise not be present if time was a limitation. For example, at the beginning of the VMC, teachers perceived themselves as ill-prepared to support ELs in their classrooms. As time progressed, in-service teachers' experience from the VMC showed that they benefited from the delayed synchronous VMC.

In sum, the teachers in this study perceived their experience as beneficial to their professional growth. The positive relationship coupled with other elements such as collaboration enabled teachers to trust their mentors and reach a place of vulnerability (Toll, 2018) for a learning transformation. As suggested by several researchers, an effective feature of mentoring and coaching consists of establishing a relationship based on mutual trust (Efron et al., 2012; Hobson & Malderez, 2013; Hudson, 2016; Kupila et al., 2017; Sowell, 2017), respect (Efron et al., 2012; Hudson, 2016; Martin et al., 2016), and collegiality (Efron et al., 2012; Hudson, 2016; Kupila et al., 2017; Martin et al., 2016). A lack of these features would not have encouraged teachers to ask questions and engage in critical discourse and self-reflection of perspectives and behaviors towards ELs. Overall, this perceived experience of mentors creating a supportive

environment in which teachers were comfortable enabled teachers to engage in critical discourse and critical reflection of their current beliefs and pedagogical practices related to ELs.

Research Question 2: How did teachers perceive and experience the VMC design in supporting their professional growth?

Implementing Structures to Facilitate Critical Discourse and Self-Reflection

In attempting to understand teachers' perceptions and experience with the VMC, we sought to determine what design features contributed to teachers' overall positive perceptions and experience. As noted previously, the positive relationship between the mentor and mentee as perceived by the mentees was a primary contributing factor in facilitating the engagement of critical discourse and critical reflection. The solid relationship coupled with a well-designed VMC as perceived and experienced by the in-service teachers demonstrated that these components are interdependent. This means that a solid relationship would not suffice in supporting teachers without a well-structured VMC.

In addressing the second research question, we found that design features such as VMC structure (e.g., detailed, individualized, video-based reflection) contributed to the flow of mentoring, which supported teachers' professional growth. The teachers in the study alluded to various features of the structure of the VMC that supported their critical discourse and self-reflection, such as (a) individualization, (b) content focus, (c) applicability, and (d) video-based reflection. The goal of the VMC was to provide a structured VMC for both the mentor and mentee; this would help maximize teachers' learning in the time mentors and mentees met. As noted in the literature, elements within a structure such as individualization or content focus have played a critical role in teachers' positive perceptions and experiences of mentoring or coaching

their professional growth. For example, in a study conducted by Hairon et al. (2020), the researchers conducted a qualitative analysis to understand the impact of a mentoring program on in-service teachers learning. The researchers derived four themes that supported effective learning of mentees: (a) structured-ness, (b) relevance, (c) applicability, and (d) workability.

Unlike Hairon et al.'s (2021) study, the current study found the structure to be an overarching theme that encompassed various sub-themes; therefore, the structure of the VMC is described in terms of relevance, applicability, content focus, and technology. In-service teachers in the study received feedback aligned to ELs' content, linguistic, and cultural needs. Regarding relevance and applicability, the teachers perceived and experienced that the feedback was individualized and contextualized to their students' needs, enabling them to apply content in their classrooms. All but one teacher expressed the positives of receiving individualized feedback that applied to their classrooms. The feedback provided was relevant for ELs, but teachers also found that the strategies could be used with diverse students, resulting in a higher relevance and applicability of the content. In traditional PD, as expressed by teachers, they received relevant feedback they could not apply in their classrooms. These findings align with other studies, where relevance was salient in providing on-the-job learning or contextualized experiences (Hairon et al., 2020; Heineke, 2013).

Another aspect of the structural design of the VMC revolved around feedback attached to classroom video observations. In the current study, teachers expressed their preference for feedback attached to their recorded classroom observation. This means that teachers received delayed feedback on their classroom practices. Providing delayed feedback at a later designated time allowed mentors and mentees time to engage in critical discourse and self-reflection. As concluded by Thurlings et al. (2013), "feedback receivers should have an opportunity to engage

in dialogue with feedback providers… (p. 12). However, as Mory (2003) suggested, feedback should be provided when the learner still remembers their actions; if not, feedback may not be relevant. The feedback was provided at a delayed time in the current study, ranging from two days when the recording was submitted to one week. To address Mory's (2003) concern, we provided feedback attached to classroom observations teachers could watch; therefore, if they had forgotten their actions, the mentor could present the action on the recorded video.

Other structural features of the VMC revolve around focus and clarity. The mentees who were interviewed mentioned that the "clear, straight, cut forward," and with a "goal in mind" allowed for the flow of discussion between the mentor and mentee, thus maximizing the teachers' learning. These findings corroborate other researchers' findings (Desimone, 2009; Hairon et al., 2020; Main & Slater, 2021). The structure of the VMC focused on providing mentors and mentees with content that was focused and clear with individualization and contextualization depending on the in-service teachers' needs. This helped ensure that the mentor's and mentee's time was maximized, essential as teachers often expressed time as a challenge.

In sum, the structure played a vital role in ensuring mentors and mentees were maximizing their time. This means that a structured VMC can facilitate the flow of critical discourse and critical reflection when features such as focus, relevance, or applicability are considered when supporting in-service teachers' growth.

Feasibility of Synchronous VMC

Another positive design feature that emerged from the data consisted of the technology used to support teachers' professional growth. One of the most noted benefits of the synchronous VMC was time and geographic location. Through a delayed synchronous approach, mentees were able to make time in their already busy schedules. Teachers in the interview also

commented on the flexibility of the synchronous approach to meet with no restrictions on geographic location. The pressure of having to be in a certain place at a specific time was removed. Similar to findings from other studies, synchronous learning could transcend challenges presented by time and geographic location (Malanson et al., 2014; Ruble et al., 2013). This means that when face-to-face mentoring and coaching is unfeasible, alternatives such as VMC should be considered to support teachers that would otherwise not have access to traditional mentoring and coaching due to time (Healy, 2020; Smith, 2014; Vu, 2014), funding (Healy, 2020; Carmouche, 2018), or geographical constraints (Healy et al., 2020; Ruble, 2013; Smith, 2014; Vernon-Feagans, 2015; Vu, 2014).

As suggested by several researchers, effective features when using video-based reflection include device quality (e.g., clear image and audio) (Hager et al., 2012; Schmidt et al., 2015), camera placement (Hager et al., 2012; Israel et al., 2013; Schmidt et al., 2015), and reliable network connectivity (Hager et al., 2012). Although VMC was revealed to support time and geographic constraints, some challenges such as device quality should be considered when developing VMC opportunities. In the teacher interviews, mentees were asked about the challenges they experienced with the VMC, and some mentioned that no challenges were presented. Others mentioned that the challenges they encountered revolved around uploading classroom observation videos to the portal. In particular, one participant mentioned the space constraints in attempting to stay within the camera frame. This specific teacher mentioned that she could not visit other students because she did not want to leave the camera frame. Although this was not a recurring theme, it is important to understand that challenges presented by constraints of teachers staying within a frame are concerning. If teachers stay within a certain camera frame, a complete representation of the classroom cannot be displayed; thus, impacting

the feedback a mentor can provide. Overall, although there were some challenges with uploading the video to the portal, mentees did not feel this interrupted or hindered their learning process. Therefore, any important element to consider in the structure of a VMC consists of reliable technology that does not impede mentors and mentees from engaging in critical discourse and self-reflection necessary for transformed learning.

Implications for Future Research

This study was instrumental in describing in-service teachers' experience with VMC related to ELs that followed a delayed synchronous approach. An in-depth understanding of how VMC with a delayed synchronous approach was used to enhance teachers' understanding of ELs could pave the way for similar research-based pedagogical approaches for in-service teachers. While this study focused on the experiences of in-service teachers across different grade levels working with ELs, other studies could use different in-service teacher groups to analyze their perspectives of VMC. For example, understanding teachers' perspectives of VMC based on teaching experience or subject-area would inform us whether VMC, as perceived by teachers, can be a viable alternative to supporting teachers' professional growth.

Although qualitative methods were conducted in this study, a previous quantitative study (Vargas et al. 2021) did explore the effectiveness of VMC and found that teachers' understanding of pedagogical practices did not improve after the VMC. Interviewing a larger group of teachers could provide more information on how VMC supported teachers' professional growth, if it did at all. Findings from a larger group could be compared to quantitative data and provide a more complete picture of how VMC impacted in-service teachers.

Additionally, data from future quantitative studies could support qualitative studies by purposefully selecting teachers who did not show growth and examining the experiences with the

VMC. Understanding why some teachers did not enhance their frame of reference related to ELs could advance the researcher in designing VMC opportunities for different teachers. Lastly, a delayed synchronous approach was used to support teacher professional growth. A future study understanding in-service teachers' experience with immediate and delayed synchronous approaches could provide more information about which approach is beneficial for in-service teachers.

Conclusion

In-service teachers of ELs have basic or no knowledge of ELs' needs (Villegas et al., 2018). In many situations, teachers of ELs are provided PD and expected to transfer learning into the classroom. Through mentoring and coaching, teachers can receive individualized and contextualized mentoring to support their individual needs. However, with constraints (e.g., geographic location), teachers cannot receive the support they need. Therefore, the present study was designed to describe in-service teachers' perceptions and experience with VMC related to ELs following a delayed-feedback approach. Interpretive phenomenological analysis revealed different themes, which helped in addressing the research questions. Based on this qualitative analysis, in-service teachers engaged in a positive relationship that led to critical discourse and self-reflection, which ultimately enhanced their perspectives and behaviors towards ELs. This means that by providing delayed feedback through a video-based reflection, a mentor can guide a mentee in enhancing their frame of reference. Moreover, this study has surfaced the importance of critical reflection, the relationship between mentor and mentee, structure, and feasibility in influencing VMC development.

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CHAPTER V CONCLUSION: A SYNTHESIS

The dissertation consisted of five chapters discussing the impact of VMC on teachers working with ELs' understanding of pedagogical practices and language content and describing in-service teachers' experiences and perceptions of the impact of VMC on their professional growth. The first chapter provided an overview of the three-article format dissertation. The second chapter was a synthesis on VMC over the last 20 years with teachers of ELs and non-ELs. The third chapter provided findings on classroom observation data to examine in-service teachers of ELs' understanding of pedagogical practices and language content. The fourth chapter provided in-service teacher insights to support future VMC developments. For the final chapter, the findings from all chapters were synthesized, and relationships between the chapters were presented.

Chapter I, a background overview of the study, statement of the problem, the purpose of the study and research questions, and significance of the study that framed this dissertation were presented for Chapters II, III, IV. The relationship between Chapter I, Chapter II, Chapter III, and Chapter IV was that Chapter I provided the overall introduction of all chapters, which set the foundation for the chapters' purpose and significance. Chapter I provided the introduction to all chapters, while Chapter IV provided a synthesis of all chapters. Chapter II was a research synthesis on the research of VMC over the last 20 years, which provided an in-depth review of all the literature on VMC, which was related to the literature required by Chapters III and Chapter IV. Now that there was an understanding of the literature revolving around VMC for in-service teachers working with ELs and non-ELs from Chapter II, additional studies could focus on contributing, which led to Chapter III. Chapter III was a study that integrated VMC to support in-service teachers working with ELs' professional growth. The relationship between Chapter II

and Chapter III was that chapter II encompassed all studies on VMC conducted over the last 20 years for in-service teachers, and Chapter III was a contribution to VMC over the last 20 years related to VMC for teachers working with ELs. The relationship between Chapter II, III, and IV, was that Chapter II provided a synthesis on research with VMC over the last 20 years and Chapter III addressed the impact of teachers' professional growth using classroom observations. Chapter IV, Chapters II, and III continued to delve deeper and understand teachers' experiences and perceptions of VMC. The final Chapter V provided an overall synthesis of each of the chapters and their relationships.

In Chapter II, a systematic review was conducted to examine the impact of VMC on teachers' professional growth, notable trends that most affected teachers' professional growth, and research designs. After undergoing a rigorous search process, a total of 15 articles met the full-text level inclusion and exclusion criteria, rendering them appropriate for the systematic review analysis. These 15 articles were thoroughly examined for sample (e.g., grade-level), intervention (e.g., mentors experience), design (e.g., medium), and outcome (e.g., surveys) characteristics. I found that overall, VMC did support teachers' professional growth. However, very limited studies, except one, were found to support in-service teachers working with ELs. Additionally, more research on specific elements that supported teachers' professional growth was necessary. The findings from Chapter II, with limited researcher on teachers of ELs' support through VMC, informed Chapter III. Investigating how VMC supported in-service teachers of ELs' professional growth regarding their pedagogical practices and language content should focus on future bilingual and ESL education research. The findings from Chapter II were used to discuss the literature on VMC and the theoretical framework for Chapters III and IV.

In Chapter III, I used data from Project ETELL captured by a classroom observation instrument, TBOP. Different domains within the TBOP instrument were utilized, ESL strategy, activity structure, mode, and language content. In Chapter III, I found that the VMC did have a significant difference between treatment and control teachers' implementation of individual ESL strategies when using light and dense language content. More specifically, for light language content, teachers in the treatment condition used more questioning techniques and graphic organizers to support their ELs. For dense language content, only one strategy, manipulatives, and realia, was statistically significantly more used by treatment teachers. Additionally, I analyzed the use of activity structures and communication modes during light and dense language content for treatment and control teachers. I found a significant difference between treatment and control teachers' pedagogical behaviors when using light and dense language content. More specifically, for activity structure with light language content, teachers in the treatment condition provided more opportunities for verbal interactions to occur; however, the distribution of interactions was low. The only communication mode widely promoted for communication mode using light language content was verbal, with minimal iterations. On the contrary, teachers in the control condition used more communication modes (writing, verbal, and reading) with higher iterations. This chapter informed Chapter IV, which examined teachers' experiences and perceptions of VMC related to their professional growth.

Chapter IV examined teachers' experiences and perceptions of VMC to explore further why not more statistically significant differences were noted across ESL strategies by language content and activity structure and communication mode by language content. In Chapter IV, I found that teachers interviewed did engage in critical reflection regarding their thinking, beliefs, and pedagogical actions towards ELs; thus, showing an increased professional growth as a result

of the VMC. This Chapter relates to all chapters by providing an additional data source to get a complete image of the impact of VMC on teachers of ELs' professional growth. The findings from this study are further synthesized in this chapter.

Chapter V presents a synthesis of all findings from Chapters II, III, and IV. The final chapters provide an overall description of the framework and approach taken to conduct the studies. Additionally, all studies are brought together to demonstrate a growing concept, VM, to support teachers' professional growth. Lastly, limitations and recommendations for future research are provided.

Summary of Study Significance and Key Findings

A rigorous search for literature revolving around VMC for in-service teachers across six databases, including bibliographies of articles that met the full-text level inclusion and exclusion criteria, was conducted. This search process resulted in 15 studies that met all criteria established (referring to Chapter II). In analyzing all studies, characteristics related to sample, intervention, design, and outcomes were collected. After analyzing all 15 articles, I organized the findings according to the research questions, which focused on teaches outcomes, VMC intervention facets, and research design. I found that all but two studies reported positive teachers' outcomes; however, these findings should be interpreted with caution as the result of no statistically significant difference was due to researchers analyzing the differences between modalities in supporting teachers' professional growth. In these findings, I extended the previous work to analyze specific elements of in-service teachers of ELs' professional growth related to ESL strategies, language structure, activity structure, and communication mode. Additionally, I found that studies followed a variation of mentoring sequence. Nonetheless, the majority of the studies followed an observe-asses- feedback sequence that allowed mentors and mentees to collaborate.

Other research designs consisted of modality used to provide VMC, frequency of sessions, mentor training. Due to the high variation of research design across the studies, more research on specific elements is necessary for future VMC developments. Lastly, I found that teacher measures differed across studies, with some studies relying heavily on solely one measurement, either quantitative or qualitative. In these findings, I extended the research by using two different measurement sources to understanding the impact of VMC. Overall, these findings led to the development of research questions in Chapters III and IV. An important finding drawn from this study is that teachers could improve their learning after receiving mentoring or coaching virtually. Nevertheless, more research on specific elements that supported teachers' learning is necessary.

For Chapter III, nominal data collected through a classroom observation instrument was used to examine the impact of VMC. This study was influenced by the gap of research in VMC for teachers working with ELs. This chapter presents the findings on how VMC impacted teachers in the treatment and control condition regarding their ESL strategy implementation by language content and activity structures and communication used during language content. All of this data was collected through the validated classroom observation instrument, TBOP. The most notable difference between treatment and control teachers' professional growth related to ELs was that teachers in both conditions invested similar amounts of time on ESL strategies across light and dense language content. More specifically, for ESL strategy during light language content, teachers in the control condition utilized visuals frequently and more than any other ESL strategy in their lessons compared to teachers in the treatment condition. For ESL strategy and dense language content, teachers in the control condition utilized more ESL strategies than teachers in the treatment condition. Teachers in the control condition significantly differed from

the treatment teachers across more than one communication mode (verbal, reading, and writing) across light and dense language content for activity structures and communication mode. Overall, teachers in the control condition receive VPD related to ELs; this is a possible explanation of why teachers in the control condition implemented an array of ESL strategies and communication modes for light and dense language content. In attempting to understand the impact of VMC, I used the findings from this chapter to conduct Chapter IV, which focused on utilizing other data sources, such as interviews, on getting an overall picture of the impact of VMC had on teachers of ELs professional growth.

In Chapter IV, I was interested in understanding teachers' experiences and perceptions of VMC related to their professional growth. In this study, a sample of eight teachers from the study in Chapter III was interviewed. In addition to the interviews, open-ended survey responses were utilized to triangulate the findings from the primary data source, interviews. I found that teachers demonstrated a deeper understanding of ELs. I found that teachers experience and perceive the VMC to support them in critical discourse and self-reflection necessary for a transformation of learning. By using a different data source to understand the impact of VMC on teachers' professional growth, I was able to find that teachers did enhance their learning towards ELs by critically reflecting on their previous practices. These findings contribute to the overall understanding of VMC's impact, which helps in triangulating findings from Chapter III. Additionally, from Chapter II, it was found that specific features of effective VMC are not mentioned. In Chapter IV, specific features of the impact of VMC as experienced and perceived by the teachers are presented.

Limitation

In this dissertation, I discussed limitations that could be considered for future researchers wanting to expand on the work of the studies in these chapters. In Chapter II, although the majority of necessary steps to ensure the limitations did not go unnoticed. Initial limitations are regarding the omission of quality assessment of each of the studies following the What Works Clearinghouse. Additionally, after combining the findings from Chapter II, III, and IV, specifically Chapter IV, where teachers shared their experiences and perceptions of synchronous VMC with delayed feedback, Chapter II's limitation is expanding the search of VMC to include asynchronous and synchronous studies. A systematic review conducted to review asynchronous and synchronous studies separately would provide a comprehensive understanding of the specific modality on teachers' professional growth; thus, informing future development of asynchronous or synchronous VMC.

The data gathered for Chapter III consisted of a sub-sample of in-service teachers. Although the sample size was sufficiently large (211), an analysis after concluding the ongoing project would provide a larger sample size and a more comprehensive picture of the impact of VMC. Additionally, a larger sample size would allow for comparisons across various characteristics (teaching experience, teaching experience with ELs). This would help analyze the data across different categories; for example, teachers with 0-5 or 11-15 years of teaching experience or teachers with low-self efficacy compared to high self-efficacy before the intervention. Another limitation was the small sample size in Chapter IV. Although the data reached saturation when interviewing the last participant, the sample is still small to generalize.

Implications and Recommendations

In conducting the systematic review, I found that few studies were related to VMC for in-service teachers, and fewer provided VMC related to ELs for in-service teachers working with ELs. Additionally, of all articles included in the synthesis, only two discussed their study's theoretical framework. A strong theoretical or conceptual framework underlying the role of VMC in supporting teachers' professional growth is necessary for future research. Moreover, VMC with instant or delayed feedback differs in their immediacy to provide in-service teachers with feedback. Further systematic reviews should analyze whether feedback immediacy or modality (asynchronous vs synchronous) separately provides an in-depth understanding of that type of VMC, which has implications on in-service teachers' transformation of learning.

For Chapter III, although my interest was not the VPD, the findings from this study suggest that the VPD supported control teachers' professional growth. One of the implications of this research is that teachers who receive VPD can demonstrate an understanding of ELs and apply the content in their classrooms. Due to minimal significant differences across the treatment teacher outcomes, it is important to consider that focused VMC on a specific area over a more extended period may better support teachers professionally. Because there were many strategies (n = 9) introduced, the recommendation is for researchers to develop VMC opportunities that extend over a more extended period to ensure teachers understand and have the opportunity to apply in their lessons. Another recommendation is to analyze VPD and VMC separately to examine independent effects on teachers' professional growth. Lastly, researchers and practitioners interested in supporting teachers' professional growth through VMC should consider researching effective features of VMC to maximize teachers' learning.

Findings from Chapter III influenced Chapter IV in understanding teachers' experiences and perceptions of the VMC they received. The findings from Chapter IV have some implications on the researcher's development of VMC opportunities that follow delayed feedback using video-based reflection. Findings showed that teachers benefitted from the VMC as they could engage in critical discourse and self-reflection necessary to enhance their understanding of ELs. Although this study only looked at teachers' experience and perceptions of VMC as a whole, future researchers should examine teachers' experience and perceptions of delayed feedback with video-based reflection in supporting their professional growth closely. Additionally, the sample from Chapter IV was a purposive sample in which participants were selected if they had experienced the VMC. However, a more refined purposive sample on in-service teachers that did not demonstrate growth in Chapter III would better demonstrate how to support different groups of teachers.